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Thursday, May 6, 1937
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with Paper Trade Journal.

Canadian Papers Protest Newsprint Price

Members of Daily Newspaper Association Respond to Severe Criticisms from United States Publishers — R. J. Cullen Reelected Canadian International President — Two Newsprint Carriers Launched at Lauzon.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 3, 1937.—The severe criticisms by the American Newspaper Publishers' Association to the announced advance of the price of newsprint from $42.50 per ton to $50 per ton for 1938 delivery have found a sympathetic response among members of the Canadian Daily Newspaper Association. According to them the sudden announcement of the increase, coupled with the attitude of certain provincial governments, is regarded as evidence of price fixing collusion between certain manufacturers and provincial governments, partly the result of government revenue requirements. Attention is drawn to the encouragement being offered by American publishers to the development of newsprint manufacture in the Southern States, and the opinion is quoted of well-informed people to the effect that the newsprint industry in the United States is going to follow the textile industry into the South, and that the completion of the new 150-ton East Texas mill, which comes into production in the summer of 1938, will start a trend culminating in the shifting of the centre of gravity of the North American newsprint industry back in the United States. On the question of making firm contracts for 1938 delivery an open mind is being preserved, the opinion being expressed that if commodity prices drop and the labor situation becomes settled before the end of the year the price situation may change. Meanwhile publishers are advised to cooperate in every way with the manufacturers in promoting the efficiency and economy of their operations, and to place their orders more or less uniformly throughout the whole year.

Higher wages for workmen in pulp and paper mills, and for men engaged in woods operations, are being put into effect in Quebec, Ontario, and New Brunswick, and it is considered that these will have the effect of raising the cost of newsprint production by $1 per ton. Wage schedules for mill workers are being revised upwards by leading companies, and government regulations are covering remunerations of all workers in the woods. Both the Quebec and the New Brunswick provincial governments have made announcements in regard to the latter during the past week. Considered in conjunction with the wide increase that has taken place in the cost of materials it is estimated in some quarters that approximately a third of the 1938 price rise or about $2.50 per ton, will be absorbed by higher costs.

Canadian International Elects

At the annual meeting of the Canadian International Paper Company, the following directors were elected: The Hon. Raoul Dandurand, Brig.-Gen. J. B. White, the Hon. Donat Raymond and R. J. Cullen, V. M. Drury, James A. Eccles, Gordon C. Edwards, G. Gordon Gale, Louis P. Gelinas, John H. Hinman, W. N. Hurlbut, Geo. H. Montgomery, J. H. Phipps, Chenier Picard, Howard P. Robinson, J. F. Rollins, T. A. Russell, H. R. Weaver and A. H. Wiggan.

At the directors' meeting which followed, Mr. Cullen was reelected president, and the following other officers were appointed: John H. Hinman, vice-president and general manager; Brig.-Gen J. B. White and W. N. Hurlbut, F. G. Robinson, C. B. Thorne and E. L. Croocker, vice-presidents; H. R. Weaver, vice-president and treasurer; Roy Campbell, secretary; A. R. Storm, E. B. Norcross, P. J. Sullivan and F. A. Laird, assistant treasurers; Coulter D. Young, G. S. McCarthy, H. C. Scott and F. A. Aufferman, Jr., assistant secretaries.

Newsprint Carrier Launched

At the shipyards at Lauzon, Que., during the past few days, the launching took place of two newsprint carriers, the *Kermic* and the *A.D.C.*

The vessels will be used by the Donnacona Paper Company on the St. Lawrence-Richelieu-New York route, via Lake Champlain. The Donnacona Company was the first to attempt the navigation of power vessels on the inland route, formerly used only by tugs and scows.

The Canadian International Paper Company placed the *International I* in service last year, running between the Gatineau and New York. With the entrance of the *Kermic* and *A.D.C.* into service a fleet of six vessels, owned by three companies, will be using the Richelieu and Lake Champlain waterway.

The season on the route is now opening. The ships carry newsprint southbound, and return with small cargoes of coal.

Wisconsin Paper Mills to Discuss Safety

Fox River Valley and Lake Shore Conference to Meet—Sixteen Graduate Students Selected for Institute of Paper Chemistry — Albert A. Wettengel Honored for 46 Years' Service—General Jottings of Wisconsin Industry.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 3, 1937—Safety activities are occupying the attention of Wisconsin mills these days. The program has been completed for the annual Fox River Valley and Lake Shore Safety Conference to be held Thursday, May 20, at Oshkosh, Wis., drawing an approximate attendance of 2,000.

General sessions will be held in the morning at which Dr. Hart E. Fisher, chief surgeon of the Chicago Rapid Transit Lines, and C. B. White, chief chemist of the American La France and Foamite Industries, Elmira, N. Y., will be the speakers.

Sectional meetings are to take place in the afternoon. The paper and pulp mill division will have as its presiding officer B. J. McClosky, of the Hoberg Paper Mills, Inc., Green Bay, Wis. Employees of the Northern Paper Mills, Green Bay, Wis., will put on a demonstration of a typical mill safety meeting. Rasmus Anderson, employee representative of the Green Bay vocational school, is to give an address.

The conference will close with a banquet in the evening at which Governor Philip F. La Follette will speak on "Progress in Industrial Safety." A safety parade will be held during the afternoon.

Approximately 350 employees of the Badger Paper Mills, Inc., Peshtigo, Wis., attended a safety dinner Saturday evening, May 1, at the high school gymnasium. Talks were given by mill officials to stimulate enthusiasm for a continued outstanding safety record . A dance was held following the program.

Employees of the Kimberly-Clark Corporation's mill at Kimberly, Wis., held a safety rally Monday noon, April 26, at the mill clubhouse. Joseph T. Doerfler, mill manager, was the speaker. He complimented the employees on their help in establishing a good safety record. A. G. Briggs of the personnel office, announced that a prize would be offered at each of a series of safety meetings twice a month, to some employee who has not been disqualified by being involved in any kind of accident, or violated the safety rules. Departments having a perfect safety record also will be given a monthly prize. An all-day safety conference is to be held May 13, with the entire Kimberly community taking part.

Collective Bargaining Rights

Nicolet Paper Corporation, De Pere, Wis., has reached a settlement with the Federal Labor Relations Board relative to charges brought by the International Union of Paper Mill Workers in which it was alleged the company was interfering with collective bargaining rights under the Wagner Act, and had discharged three employees for union activity. The three workers were rehired and are to be given pay in full from the date of their discharge September 29, 1936. A hearing was held before labor board representatives in Milwaukee March 18, with N. S. Clark, regional director, in charge. Edward J. Dempsey of Oshkosh, Wis., the company's attorney, appeared on behalf of the company. This is the first case handled by the board in Wisconsin.

The three-man labor relations board created by a new law passed by the Wisconsin Legislature has been appointed by Gov. Philip F. La Follette. The appointees are: Edwin E. Witte, economist of the University of Wisconsin; Voyta Wrabetz, chairman of the Wisconsin Industrial Commission, and the Rev. Father Francis J. Haase of Milwaukee, who has acted as federal mediator in labor disputes. The Senate immediately confirmed the appointments. These are temporary, as no appropriation is available until July 1, when salaries of $5,000 a year will be in effect. The board will serve without pay in the meantime.

One of the board's first functions will be to select two statewide committees—one representing employers, the other representing labor—whose duty it will be to seek the preservation of industrial peace, and to prevent labor troubles from developing into cases that will demand interference by the board.

Paper Chemistry Institute

Sixteen graduate students have been selected out of a list of 150 candidates by Dr. Harry F. Lewis, dean, for enrollment in the Institute of Paper Chemistry, Appleton, Wis., next fall. They will work for master of science and doctor of philosophy degrees. The class will take a "bush course" for a week in September at a logging camp in northern Michigan, to study sources, selection and handling of wood.

Those entering, and the institutions from which they come are: Harold Charbonnier, Syracuse University; Tilford Collins, Rice Institute; Donald Cushman, Colgate University; John Hartley, Pennsylvania State College; Kenneth Hay, Tufts College; John Hechtman, University of Arizona; Glenn Kimble, Iowa State College; Paul Kleppisch, Northwestern University; Shirley Parsons, University of Maine; Robert Reed, University of Rochester; Charles Relley, Purdue University; George Sheets, Ohio State University; Herbert Smith, Ohio Wesleyan University; Robert Stillings, Montana State University; Paul Wiley, Harvard University, and Alfred Graef, University of Wisconsin.

General Trade Jottings

ALBERT A. WETTENGEL, president and general manager of the Schlafer Supply Company, Appleton, Wis., was honored for his 46 years of service with the company at a dinner given last week by about 75 employees and their wives at Hotel Northern. The company has sold supplies to the paper mills for half a century. Talks were given by several of the officials.

SMITH MCLANDRESS has resigned his position with the Fox River Paper Company, Appleton, Wis., and has moved with his family to Glens Falls, N. Y., where he will be located hereafter.

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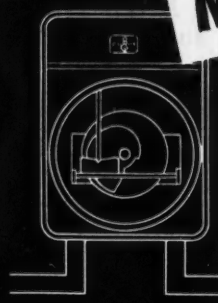

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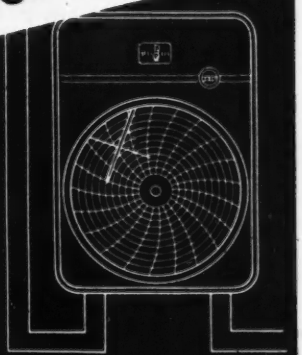

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BRISTOL'S

TRADE MARK REG. U.S. PAT. OFF.

U. S. Printing Office Makes Paper Awards

Contracts Are Let On Various Lots of Paper on Which Bids Were Printed Recently — Government Printing Office Will Receive Bids May 24 for Waste Paper, etc., That May Accumulate At the Printing Office.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 5, 1937—The Mathers-Lamm Paper Company has been awarded the contract for furnishing the Government Printing Office with 15,000 pounds (21,000 sheets) of 22 x 32″ marble grained lined board at 4,331 cents per pound.

The Stanford Paper Company will furnish 3,000 pounds (50,000 sheets) of 24 x 36″ No. 2 kraft wrapping paper at 5.25 cents per pound and the Perfect Safety Paper Company will furnish 4,000 pounds of white writing paper in 8½″ rolls at 9 cents per pound. Bids for all of these items were received on April 19.

The following bids have been received for 115,000 pounds (1,000,000 sheets) of offset book paper: Stanford Paper Company, 6.475 cents per pound; Cauthorne Paper Company, 6.41 cents; Reese & Reese, Inc., 6.54 cents and 6.69 cents; Whitaker Paper Company, 6.4 cents; R. P. Andrews Paper Company, 6.55 cents; Mathers-Lamm Paper Company, 6.55 cents; Barton, Duer & Koch Paper Company, 6.59 cents; Old Dominion Paper Company, 6.528 cents and 6.674 cents; and Paper Corporation of United States, 6.69 cents and 6.54 cents.

For 40,000 pounds (42,400 sheets) of chip board: Container Corporation of America $47.40 per ton less 1%; Cauthorne Paper Company, $46.56; Walker-Goulard-Plehn Company, Inc., $44.40, less 1%; Whitaker Paper Company, $46.00; R. P. Andrews Paper Company, $46.00; Mathers-Lamm Paper Company, $49.00; Barton, Duer & Koch Paper Company, $45.30; Dobler & Mudge, $46.40; Virginia Paper Company, $46.00; and Stanford Paper Company, $46.00.

The following paper awards have also been announced:

The Whitaker Paper Company will furnish 115,000 pounds (1,000,000 sheets) of 24 x 38″ offset book paper at 6.4 cents per pound, bids for which were received on April 23.

The Aetna Paper Company will furnish 2,826 pounds (42,825 sheets) of 25% rag, salmon, blue and green, 28 x 34″ bond paper at 16.98 cents per pound while the National Pulp and Paper Company will furnish 400,000 pounds of newsprint paper in 48″ rolls at 2.3 cents per pound. Also the Cauthorne Paper Company will furnish 500 pounds of red stereotype molding paper in 24″ rolls at 15 cents per pound. Bids for all of these items were received on April 21.

Walker-Goulard-Plehn Company will furnish 8,000 sheets of 20½ x 30½″ white car sign board at $25.99 per M sheets, bids for which were received on April 19.

Bids received for 40,000 pounds (26,400 sheets) of chip board were as follows: Resolute Paper Company, 2.25 cents; L. Hyman & Son, 2.295 cents; Old Dominion Paper Company 2.299 cents; Virginia Paper Company, 2.18 cents, Dobler & Mudge, 2.32 cents; Enterprise Paper Company, 2.3015 cents; Barton, Duer & Koch Paper Company, 2.265 cents; Mathers-Lamm Paper Company, 2.45 cents; R. P. Andrews Paper Company, 2.298 cents; Whitaker Paper Company, 2.16 cents; and Container Corporation of America, 2.37 cents.

For 350,000 pounds of supercalendered book paper: Paper Corporation of United States, 5.74 cents; and R. P. Andrews Paper Company, 5.82 cents.

For 1,000 pounds (31,000 sheets) of white paraffin paper: J. R. Howarth Paper Company, 9.9 cents; Shawmut Wax Paper Company, 9 cents; R. P. Andrews Paper Company, 10.25 cents; Mathers-Lamm Paper Company, 9 cents; Enterprise Paper Company, 10.25 cents; Old Dominion Paper Company, 10.9 cents; Stamford Paper Company, 10.25 cents; and Whitaker Paper Company, 9 cents.

For 1,000 pounds of white stereotype molding paper: Cauthorne Paper Company, 11 cents; and Russell Products Company 13 cents.

Bids for Waste Paper

The Government Printing Office will receive bids on May 24 for waste paper, shavings, etc., that may accumulate at the Printing Office during the fiscal year beginning July 1 next. The estimates of the accumulation are as follows:

White and colored shavings from blanks, blank books, and clean waste; free from ground wood, 100,000 pounds.

White shavings from book and mimeograph papers and clean white waste, free from ground wood, 400,000 pounds.

White shavings from book papers, mixed with colored cover paper trimmings; free from ground wood, 100,000 pounds.

White and colored shavings and clean waste, free from ground wood and binders board trimming, 100,000 pounds.

Newsprint and wood manila shavings and clean waste, 200,000 pounds.

Postal card bristol trimmings and clean waste, free from ground wood, 200,000 pounds.

Used white monotype keyboard paper, in rolls, free from ground wood, 70,000 pounds.

Binders board, strawboard, and chipboard cuttings, 200,000 pounds.

Paper wrappers from rolls and flat stock and miscellaneous paper waste, free from oiled and tarred papers, 3,000,000 pounds.

Printed paper waste, free from ground wood, 400,000 pounds.

Discarded publications, consisting of various grades of printed paper, as is; bound in paper, or in boards covered with leather, cloth, or paper, 400,000 pounds.

Wrapping twine and rope from bundles, 4,000 pounds.

Waste and scrap book cloths, including cotton (bleached and unbleached), canvas (white and colored), unbleached linen canvas, cotton drilling (drab), and buckram, 15,000 pounds.

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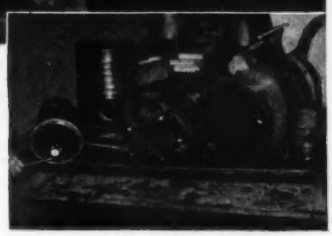
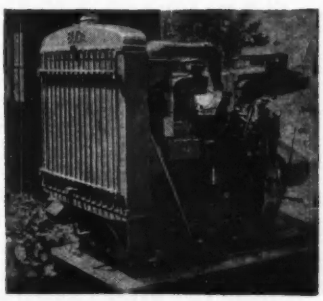


You'll find little evidence of wear, little need for parts replacement when using Texaco Algol or Ursa Oils. These oils help substantially in keeping Diesels in their prime.



Maintained efficiency and freedom from carbon troubles in smaller Diesels and portable units, often operating under less favorable conditions, is largely a question of lubrication. Texaco oils will meet these conditions.

WHEN you tear down your Diesels, you'll find piston rings, valves, and ports that are clean, maintaining high compression that means fuel economy and low maintenance costs.

TEXACO ALGOL and URSA OILS are wholly distilled, and freed from the impurities which cause gummy deposits that burn into flint-hard carbon. What little carbon forms is dry, fluffy . . . blows away harmlessly.

Many Diesel cylinder oils break down under the intense heat, forming tar and gum that stick rings and valves and cause loss of compression, fuel waste, high maintenance costs.

More Diesel h.p. is lubricated with Texaco throughout the United States than with any other brand.

Trained lubrication engineers are available for consultation on the selection and application of Texaco Petroleum Products. Prompt deliveries assured through 2020 warehouse plants throughout the United States. The Texas Company, 135 East 42nd Street, New York City.

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Lubricants for all types of Diesels

Paper Salesmen's Study Course Graduation

Ninety-five Philadelphia Students Successfully Complete Session — Celebrated by Banquet in Crystal Room of Adelphia Hotel — Activities of the Course Have Included Numerous Lectures and Plant Visitations.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 3, 1937.—Upwards of two hundred representatives of the paper and allied industries attended the graduation exercises of the ninety-five students who successfully completed the Paper Salesmen's Study Course, which was celebrated by a banquet in the Crystal Room of Adelphia Hotel on Thursday evening, April 29.

It was indeed a gala night in paper annals. During the banquet all those present were treated to a very elaborate musical program by a celebrated orchestra, after which various phases of the terpsichorean art were presented by internationally famous female talent.

The activities of the Paper Salesmen's Study Course, which have appeared in these columns from time to time, have included lectures and plant visitations. This Course was inaugurated by the Paper Trade Association of Philadelphia under the direction of Ormond Freile and Mrs. Doris E. Lewis, president and executive secretary respectively, of the association.

President Freile Chairman

President Freile presided at the graduation exercises, and seated at the speakers' table were John R. Howarth, J. R. Howarth Paper Company; Winfield Challenger, N. W. Ayer & Son, Inc.; Ross W. Fishburn, Whiting-Patterson Company; Howard S. Peckham, Hammermill Paper Company; Simon Walter, Simon Walter, Inc.; Raymond Blattenberger, Edward Stern & Co.; Joseph H. Miller, Garrett-Buchanan Company; A. H. Melville, Pennsylvania State College; Ormond Freile, Paper Merchants, Inc.; Mrs. Doris E. Lewis, executive secretary, Paper Trade Association of Philadelphia; Wm. A. Hentz, The Thos. W. Price Company; LeRoy A. Bishop, Raymond & McNutt Company; George K. Hooper, Hooper Paper and Twine Company; Miss Marion E. Carson, Typothetae of Philadelphia, Inc.; William A. Meeks, manager, Typothetae of Philadelphia, Inc.; Mrs. Katherine H. Norman, PAPER TRADE JOURNAL; Fritz Peters, Ruttle, Shaw & Wetherill; C. S. Ruddle, Cuneo Eastern Press, Inc.; A. J. Abraham, Hartman Company; L. D. Weisgerber, Philadelphia Bindery, Inc.; Henry J. Considine, Paper House of Pennsylvania, and Van Walden, Paper and Paper Products.

President Freile congratulated the students, and said—"The Paper Salesmen's Study Course on the 'Fundamentals of Printing' was designed to help in some degree toward improving the knowledge necessary to the paper salesmen. The spirit of the program was to give an opportunity to paper salesmen to get a perspective of the huge industry they serve as suppliers of raw material and an understanding of its problems and needs. To this end, plant visitations and educational moving pictures and films combined to carry the story from the history of printing to the present-day modern city daily newspaper."

Mr. Freile expressed his appreciation, personally and officially, to the following who so unstintingly cooperated: William Henry Welsh, Director of School Extension, Board of Public Education, City of Philadelphia; E. L. Keller, Supervisor of Field Service Division, Pennsylvania State College; H. A. Myers, Philadelphia Representative for Pennsylvania State College Extension Service; A. H. Melville, Education Co-ordinator, Pennsylvania State College; William A. Meeks, manager, Typothetae of Philadelphia, Inc.; Cuneo Eastern Press, Inc.; Ruttle, Shaw & Wetherill, Inc.; Champion Paper and Fibre Company; International Printing Ink Corporation; Beck Engraving Company; Mack Printing Company; N. W. Ayer & Co.; Edward Stern & Co., Inc.; Philadelphia Bindery, Inc.; Philadelphia Inquirer; Harris-Seybold-Potter Co.; Hartman Co.; Hammermill Paper Company; Colorgraphic Press, Inc.; Paper Merchants, Inc.; Philadelphia Chamber of Commerce.

As a fitting climax, a very artistic floral plateau was presented to Mrs. Lewis, by the graduates as a token of their high esteem of this gracious and efficient lady.

Post-Prandial Exercises

At the post-prandial exercises, Penn State College certificates together with a bound volume containing all the lectures included in the Course, were presented to the following graduates:

Thomas J. Hare, Jr., Atlantic Paper Company; Gus P. Johnson, Harold A. Simon, Calvin A. Troutman, Carl E. Belles, Erich B. Wagner, George R. Phelps, and Charles S. Bougher, of Charles Beck Company; Francis J. Sammons of Champion Paper and Fibre Company, Philadelphia Office; Lewis E. Pederson and Roger B. Garlock, of Dill & Collins, Inc.; Henry P. Enckler, Francis J. Mahon, W. Russell Loose, F. J. Wirth, D. Paul Schaeffer, Walter S. Dickfield, Charles Elitzky, Charles P. Corey, R. Loudenslager, Doyle P. Heverly, William D. Mulhern, William J. Linderman, Harvey Van Leer, of Garrett-Buchanan Company; Robert L. Hartung, Joseph Allen Heins, Milton C. Walker, Jack Woodland, John O. Franz, Jr., Alfred C. Hirsh, Jr., of A. Hartung & Co.; Howard W. Perkins, James T. Stewart, John E. Giurato, Laurence Egan, Morris Joseph, of Hooper Paper and Twine Company; A. Markley, Alfred Clearwater, Otto W. Renner, of J. R. Howarth Paper Company; William F. Wolohan, Norman E. Hinkel, of Molten Paper Company; Henry J. Considine, J. Earl Miller, Paul Klang, of Paper House of Pennsylvania; John A. O'Brien, Morton J. Porter, Charles L. Becker, E. F. Moutin, J. K. Quinn, John C. Collins, of Paper Merchants, Inc.; Leon H. Magil of Penn Card and Paper Company; John Price, William Kramer, J. P. Richards, Jr., Thompson McIntire, John M. Strine, Norman W. Fort, Jr., Colson H. Hillier, H. L. Leatherman,

(Continued on page 60)

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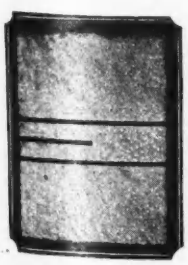

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Hamilton Felts

Financial News of Pulp and Paper Industry

Fraser Companies Consider More Favorable Interest Basis — Detroit Paper Products May Issue Preferred Stock — Consolidated Paper Products Shows Improvement — American Writing Paper Co. Reports Loss.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending May 5, 1937.

	High	Low	Last
A. P. W. Paper Co.	7⅞	7¼	7⅞
Armstrong Cork Co.	65	60¼	64½
Celotex Corp.	42¾	39	42
Celotex Corp., pf.	78	75	76½
Certain-Teed Products Corp.	17¾	16½	17
Certain-Teed Products Corp., pf.	71	69½	70½
Champion Paper & Fibre Co.	55	53½	55
Champion Paper & Fibre Co., pf.	109	108	109
Congoleum Nairn Co.	40¾	37¾	40
Container Corp. of Amer.	36⅝	34½	35¼
Continental-Diamond Fibre Co.	21	20⅛	20⅝
Crown Zellerbach Co.	21⅝	19½	20¾
Crown Zellerbach Co., cum. pf.	104½	101	104
Flintkote Co.	35½	32½	34⅜
International Paper & Power (a)	19¾	17½	18½
International Paper & Power (b)	14⅝	13	13¼
International Paper & Power (c)	7¾	6⅞	7¼
International Paper & Power pf.	108⅜	100¼	105
Johns-Manville Corp.	134⅛	125½	130¼
Johns-Manville Corp., pf.	124½	124½	124½
Kimberly-Clark Corp.	43⅜	41	42¾
MacAndrews & Forbes	31½	30½	31½
MacAndrews & Forbes 6% cum. pf.	130	130	130
Masonite Corp.	56	55	56
Mead Corp.	30½	28	29½
Mead Corp., pf.	95⅞	94	94
Scott Paper Co.	40½	39½	40½
Sutherland Paper Co.	37¼	34	36½
Union Bag & Paper Corp.	85¾	79	85
United Paperboard Co.	13¼	12	12¾
U. S. Gypsum Co.	115	107⅞	113¾
U. S. Gypsum Co., pf.	158⅝	156⅝	156⅝

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending May 5, 1937.

	High	Low	Last
American Box Board Co.	22⅛	20⅝	21¾
Brown Co., pf.	72½	68	72½
Great Northern Paper Co.	42¾	41	42
St. Lawrence Corp.	12¾	11¼	12¾
St. Lawrence Corp., pf.	32	30	32
St. Regis Paper Co.	9½	8¼	9¼
St. Regis Paper Co., pf.	107	105½	105½
Taggart Corp.	13⅛	11¾	13⅛

Fraser Co.'s Report

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 3, 1937—It is announced here that Fraser Companies, Ltd., is considering arrangements to place its funded debt on a more favorable interest basis, which will greatly enhance the equity of the common stockholders.

Another important development of particular interest is that the company has obtained an adjustment in its contract with Sears, Roebuck & Co. for the supply of catalog paper, by which the price of the paper is increased $10 per ton.

The contract, signed in October, 1928, for a ten-year period, absorbed the entire tonnage of the original catalog paper machine and required the installation of an additional machine, which came into operation in January, 1930.

The bonds which the company is planning to refund, are a 6% first mortgage, due 1950, outstanding to the amount of $10,576,500, of which $2,542,000 are held by the bank as security for a special loan and $196,000 are held by the trustee. Assuming refunding on a basis of 4½%, the company would save annually $117,578 on the $7,838,500 of bonds actually outstanding and in the hands of the public. This interest saving is equivalent to 33 cents per share of common stock.

For the first quarter of the current year, Fraser Companies reports net income, after all charges, of $167,840, equivalent to 47 cents per share. As the statement is the first quarterly one issued by the company, direct comparisons with preceding three-month periods are impossible. This figure is substantially ahead of the net shown for the full twelve months of 1936.

The company is currently operating at capacity and the outlook is more favorable than at any time in its history. With higher prices prevailing for certain of its products, earnings this year will continue to expand.

The company has moved its administration office to larger quarters in the Dominion Square Building, Montreal.

Plans Financing to Expand

A plan to buy a paper factory and issue preferred stock to raise the money for it was submitted to shareholders of the Detroit Paper Products Corporation, meeting in Detroit on Tuesday. In a letter to shareholders the directors announced that purchase of a plant to provide raw paper materials has been under consideration for some time and that the factory of the Western Board and Paper Company at Kalamazoo, Mich., unused for seven years, has been placed under option.

The board recommends buying the Western Board plant for $115,000 cash and 30,000 shares of common stock, $1 par value. The agreement would specify, however, that Detroit Paper Products would have the right to buy back this stock at $7 a share any time before November 18, 1938. The letter to shareholders says the Western Board plant is worth $456,919 according to an appraisal and needs $200,000 of reconditioning.

The letter reports a tentative underwriting agreement concluded with underwriters headed by Weed, Hall, Brandt & Co. to take 25,000 shares of 6 per cent preferred stock at $25 a share, less commission of $3.25 a share. Detroit Paper would turn over to the underwriters all rights in the 30,000-share option mentioned above.

Dixie-Vortex Profits Rise

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 3, 1937—The Dixie-Vortex Company, now coming into its peak sales period, is relying considerably on a warm summer season and sustained general business activity to develop its earning potentialities to the fullest extent. R. C. Fenner, president, expects the summer season to clearly indicate the advantages of the combination of the Vortex Cup and Individual Drinking Cup concerns. The Chicago plant, containing 200,000 square feet, and the Easton plant of 280,000 square feet are both prepared for a record summer season. Earlier in the week the company reported first quarter earnings nearly 30 per cent ahead of a year ago and indicates that the only pessimism in the current picture is the problem of meeting increased material and

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labor costs. The Dixie-Vortex company is the largest manufacturer of paper cups and dishes with upwards of 400 standard items being made besides a number of specialties. Distribution is made through branches in New York, Philadelphia, Boston, Atlanta, Baltimore, Cleveland, Detroit, Los Angeles and Pittsburgh.

Consolidated Income

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 3, 1937—At the annual meeting of the Consolidated Paper Corporation, L. J. Belnap, president, said that the company had experienced substantial improvement in business this year. Sales for the first quarter have shown an increase of about 6 per cent. Financial position was substantially strengthened as at the end of the quarter. For the first time since formation of the company, an excess of current assets over current liabilities was shown. Contributing to this improvement was collection of $1,225,000 from Price Bros. in satisfactory settlement of a claim. Mr. Belnap stated that as at April 15, 1937, the market value of investment securities held by the company was $1,500,000 in excess of the book value, which was $1,326,243 as at December 31, 1936. There was also a substantial reduction in bank loans. These were shown at $9,156,777 as at December 31, 1936, including "special bank loans" of $7,604,777.

Great Lakes Report

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 3, 1937—Economies in operation effected by the new directorate of the Great Lakes Paper Company, Fort William, Ont., have been reflected in earnings results of the corporation in the current fiscal year to date. Since the present board took over direction of operations, production costs have been reduced by over $5 per ton, and selling costs by about 50 per cent. The plant is working at capacity, and the company in the current fiscal period will have the benefit of revenue from by-products developed, and an advance of $1.50 in the price of newsprint compared with that prevailing in 1936.

Howard Paper Protests Tax

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, May 3, 1937—The Howard Paper Company of Urbana, in which Colonel Maxwell Howard, of the Aetna Paper Company, this city, is the head, has sent a petition to the Board of Tax Appeals, in Washington, asking that it set aside a $122,462 deficiency charged against its 1935 income taxes.

The company attacked the constitutionality of the statute under which the assessment was made, saying that Section 102 of the 1934 Internal Revenue Act "under the guise of taxation" attempts to regulate the internal affairs of corporations.

Hampden Glazed Statement

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., April 27, 1937 — The Hampden Glazed Paper and Card Company of this city has filed its annual statement as follows:

Assets—cash $72,402, accounts receivable from customers, $123,829; receivable from others, $1,342; notes receivable, $945; merchandise and supplies, $341,250; securities, $367,380; real estate, $345,773; machinery, vehicles, etc., $427,837, prepaid insurance, $14,743; patent rights, $1,129; accrued interest receivable, $2,079; timberland, $1,700. Liabilities—Accounts payable, $52,157; accrued taxes, $8,398; reserve for depreciation, $289,366; reserve for rehabilitation and reconstruction, $145,115; capital stock, $56,000; surplus, $1,149,375.

American Writing Report

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., May 3, 1937—American Writing Paper Company, Inc., reports for the March quarter net loss of $6240. This loss is after depreciation, idle property expense and interest on funded debt, these three items totaling $129,969. In the same period of 1936 the comparable loss was $82,298, and for the fourth quarter of 1936 the indicated loss was $62,562.

Net sales increased from $1,465,431 in the first three months of 1936 to $1,869,601 in the same three months this year.

Balance sheet dated March 31 shows current assets totaling $2,197,224, of which cash amounted to $197,355. Current liabilities were $409,794. These figures compare with current assets of $1,964,124 on Dec. 31, 1936, and current liabilities of $277,439.

Fort Howard Statement

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 5, 1937—The Fort Howard Paper Company, Green Bay, Wis., has filed a registration statement with the Commission covering 7,500 shares of $100 par value 5% cumulative preferred stock of which 1,778 shares are to be offered in exchange for the company's outstanding $100 par value 7% cumulative preferred stock on a share for share basis plus $6 in cash, and the remaining shares are to be offered at $100 a share. The company also registered 7,000 shares of $100 par value common stock to be offered stockholders at par. The proceeds are to be used to redeem any of the 7% preferred not exchanged, and for working capital.

Straw Pulp Co. Folds

PALOUSE, Wash., April 26, 1937 — Ending a dream of manufacturing paper pulp from wheat straw, trustees of the Palouse Pulp and Paper Company, Inc., have requested the superior court to appoint a liquidator to divide assets of the company among the stockholders. Assets include about $500 in a bank here.

The company was organized in Palouse in 1929, and demonstrated a process for the manufacture of paper from wheat straw pulp. It soon became inactive. Trustees included A. K. Harrington, J. A. Twitmeyer, E. E. Boone and Roy Smith, all local men.

Gair Co. Profits

The Gair (Robert) Company, Inc., and subsidiaries report for March quarter: Profit after interest on bonds of subsidiary company and dividend on preferred stock of subsidiary was $419,695 but before providing for interest on income notes and Federal income taxes. The provision for interest on income

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notes and Federal income taxes amounts to about $104,000. This compares with profit of $80,055 before interest on income notes and income taxes in first quarter of 1936, when the interest on income notes and Federal income taxes approximated $60,000.

Mead Corp. Elects

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, May 3, 1937—The annual meeting of the stockholders and members of the board of directors of the Mead Corporation was held the past week in the offices in the Refiners Building, Main street and Monument avenue.

George H. Mead was re-elected president and R. T. Houk, of this city, was re-elected vice-president.

J. O. Mason, of Chillicothe, where the company's large mills are located, was named a vice-president and member of the board of directors.

Steed Warren, formerly of this city, and now of Chillicothe, also was chosen to be a member of the board of directors.

The company had a most successful year in 1936, according to the recent annual report, and it was stated this week that prospects for this year are even better.

Pulpwood Corp. Finances

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 3, 1937—Articles of incorporation of the Pulpwood Corporation, Appleton. Wis., have been amended to diminish the capital stock from $100,000 to $1,000. The amendments have been filed with the secretary of state at Madison, Wis., and are signed by W. A. Fannon, president, and W. S. Taylor, secretary. The company was originally capitalized at $90,000, consisting of 900 shares, par value $100. Later the capitalization was increased to 1,000 shares at $100.

Nashua Gummed Registration

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 5, 1937—The Nashua Gummed and Coated Paper Company, Nashua, N. H., has filed a registration statement with the Federal Securities and Exchange Commission covering 9,500 shares of no par value common stock, of which 3,000 shares are outstanding. The proceeds to be received by the company from the sale of 6,500 shares are to be used for plant additions and for working capital.

Lily-Tulip Profits Higher

The Lily-Tulip Cup Corporation reports for twelve months to March 31: Net profit before provision for excess profits tax and surtax, $480,334, equal to $2.53 each on 189,539 no-par capital shares. In corresponding period of previous year net profit amounted to $297,496 or $1.57 a share.

Pictorial Paper Profits

The Pictorial Paper Package Corporation reports for March quarter: Net income, $25,986, equal to 25 cents each on 105,700 shares, present capitalization. Net income last year was $23,828, or 19 cents a common share, according to figures filed with SEC.

Whitaker Paper Dividend

Directors of the Whitaker Paper Company have declared the regular quarterly dividend of $1.75 on preferred stock payable July 1 to stockholders of record June 19. Given reports of business improvements, the directors, at their quarterly meeting, also declared dividends of $1 and 50 cents, or $1.50 in all, on common stock, payable along with the preferred stock dividends.

Oxford Paper Report

The Oxford Paper Company of Rumford, manufacturers of magazine and other fine-grade paper, reports for the first three months of 1937 net income available for preferred dividends after all charges of $357,634, compared with $74,194 in the first quarter of 1936. This represents an increase of more than 450 per cent. Earnings of the company in April were said to be running at a higher monthly average than in the first three months of the year.

Scott Paper Earnings

The Scott Paper Company reports for March quarter: Net earnings, $257,276. equal to 45 cents each on 569,983 shares of common stock, against $207,089, or 36 cents a share on same basis, a year before. Edward S. Wagner, first vice president and treasurer, said: "A 20 per cent increase in business enabled the company to show higher earnings despite a rise in costs for materials, wages and salaries."

Imperial Paper Stock Dividend

Stockholders of the Imperial Paper and Color Corporation voted today to change the par value of the company's stock from $100 to $25. Later, the directors declared a stock dividend of 25 per cent, payable to holders of record of today. The stockholders now will receive five shares of $25 par stock for each share of $100 par value stock held.

Hummel-Ross Earnings

The Hummel-Ross Fibre Corporation reports for March quarter: Net profit applicable to common stock, $166,799, equal to 43 cents a share on 389 625 common shares of $5 par, compared with $58,697 or 15 cents last year. Sales for the first quarter amounted to $832,044, compared with $554,151 last year, a gain of 50.15 per cent.

Paper Men Elected Directors

Alexander Thomson, chairman of the board of the Champion Paper and Fibre Company, Hamilton, Ohio, and Joseph M. Conway, president and general manager of the Hoberg Paper Mills, Inc., Green Bay, Wis., have been elected members of the board of directors of the United States Chamber of Commerce.

National Gypsum Profits

National Gypsum Company report for March quarter: Net profit, $172,915, compared with $55,624 last year. Sales for the quarter were 95.5 per cent above those of the same period in 1936. M. H. Baker, president, stated.

In any business, the volume of past and present production can be studied in cold statistical charts. More difficult of analysis—but vastly more significant from the standpoint of future profit—is the amount of business now in the "plan" stage . . . Puseyjones shops are working *full time.* Puseyjones engineers are working *over-time.*

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Established 1848. Builders of Paper-making Machinery, Wilmington, Del.

Superintendents Convene

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., May 1, 1937—The April meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents' Association was held at the Park-American Hotel on Thursday evening, April 22, with forty attending.

Dinner preceded the meeting, after which, with Otto Fischer, chairman, presiding, routine business was disposed of.

Barney A. Yule, representing F. C. Huyck and Sons, was the guest speaker and he exhibited their famous talking picture showing the complete manufacturing operation of paper makers' felts. Following the running of the film an Open Forum was held in which a barrage of questions pertaining to felt problems were fired at Mr. Yule. He demonstrated beyond any doubt that he was thoroughly posted on all angles of his product and gave much constructive advice on the use and care of felts.

Homer Stafford, who is a runner-up to Mike Redmond in years of experience, stated that he had never made a claim for a felt adjustment on account of fault in weaving, further stating that all his trouble had always been traced back to improper adjustment of mechanical defects.

Among those present were M. F. Flotow, E. G. Walker, R. L. Zellers, of the French Paper Company; R. B. Stewart, R. B. Stewart Jr., L. H. LaLiberte, Kalamazoo Vegetable Parchment Company; Bud Mueller, H. M. Eastman, Paul Easton, Hercules Powder Company; B. A. Yule, F. J. Huyck and Sons; Otto Fischer, J. L. Russell, Bryant Paper Company; C. "Baldy" Smith, Barney Benson, Williams Gray Company; L. H. Breyfogle, Draper Felts; Paul de Gauchey, Dwight Stocker, M. S. Fogerty, R. L. Barton, W. H. Astle, Michigan Paper Company; J. C. Weidmeyer, H. C. Baker, Green Bay, Wisconsin; A. L. Sherwood, J. A. Heenan, Arnold Weller, Sutherland Paper Company; L. M. Mongrieg, U. S. Rubber Company; A. E. Woollam, Gould Pumps; H. C. Bradford, A. W. Cole, Rex Paper Company; P. H. Dumas, Chromium Corporation; H. E. Stafford, E. M. Cowling, Hawthorne Paper Company; M. D. Bardeen, Lee Paper Company; O. W. Callighan, Edgar Brothers; H. J. Toole, Pagel and Horton Company; H. A. Brown, R. T. Masburn.

Box Manufacturers Convention

U. S. Senator Burton K. Wheeler of Montana and Martin Ullman, New York, authority on industrial design and merchandising, are to be the principal speakers at the 19th annual convention-exposition of the National Paper Box Manufacturers Association, Cincinnati, May 23-26. Harold S. Fuller, Boston, president of the association—which represents a $100,000,000 per annum industry—anticipates the largest gathering since the code days.

A set of fair trade practices has been prepared for adoption by the box manufacturers at this convention; likewise new by-laws providing for broader association activities under present changing business conditions.

An exposition of supplies, equipment and machinery used in the manufacture of setup (rigid) paper boxes will be held in conjunction with the convention.

Boston Jottings

THE EASTERN STATE PAPER AND BAG DISTRIBUTORS ASSOCIATION, at a general meeting, including about forty wrapping paper merchants from Eastern and Northern New England, held at the Hotel Manger Wednesday for the purpose of organizing a local branch, Harry J. Dowd was elected president of the local group, John C. Hurd, secretary, and Willard Loud, treasurer. Other local meetings are to be held in cities in the near future and a convention in New York on May 14, to which delegates will be sent. Mr. Dowd, who is vice-president of the Eastern States Paper and Bag Distributors Association, presided. Considerable discussion of conditions affecting distribution took place. Among those attending the meeting were President L. Resnick and Secretary Lewis, of the Eastern States Association, both of Philadelphia.

THE COST FINDING COMMITTEE GROUP of Boston is to be held Friday at the Boston Chamber of Commerce.

THE NEW ENGLAND PAPER MERCHANTS ASSOCIATION is rendering an additional service to members by tabulating and issuing the bids of the Commonwealth of Massachusetts business.

THE GROVETON PAPER COMPANY, Groveton, N. H., is putting on the market new weight of Groveton Index, handled by Boston jobbers.

ERNEST S. REID, mill representative, 80 Federal street, announces that his son, Robert S. Reid, is now associated with him in his work as sales representative for the following paper mills: Crystal Tissue Company, Middletown, Ohio; Hamersley Manufacturing Company, Garfield, N. J.; Kleen Products, Inc., North Wales, Pa., and Indianapolis, Ind.; Orchard Paper Company, St. Louis, Mo., and Wortendyke Manufacturing Company, Richmond, Va.

WALTER R. FLANNERY, for eighteen years with Storrs & Bement Company, is now with Knight, Allen & Clark, Inc. His wide experience in the paper business will be a valuable asset to the company, which is building up a very efficient sales force.

SIEGFRIED LEVY, head of a paper stock establishment in Hamburg, Germany, called on the trade here last week.

Oliver Secures L. W. Knapp

Oliver United Filters Inc. announces the appointment of L. W. Knapp to its sales engineering staff at the New York office. Mr. Knapp, formerly with the Oliver Continuous Filter Company and more recently with The Taintor Company, brings to his new duties not only a broad knowledge of the process industries but an understanding of filtration gained through his former sales work in connection with the Oliver Filters.

New Wage Covenant

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 3, 1937—A conference was recently held at the King Edward Hotel, Toronto, at which John Burke of Albany, N. Y., president of the Pulp, Sulphite & Paper Mill Workers' Union, was present, along with the representatives of large pulp and paper companies of the province—the Abitibi, Provincial, Great Lakes, Ontario, Minnesota and Ontario and Spruce Falls.

An agreement was reached whereby wage increases ranging from 11 to 15 cents an hour which it is said may increase the cost of production as high as $1.00 per ton will go into effect among the 5,000 workers in leading plants. Mr. Burke announced that the increases, all that seven international trade unions sought for the men, had been conceded. The companies entered into a two-year agreement, and Mr. Burke added that if conditions were at all normal, he would prefer a two-year agreement rather than a one-year.

The new covenant brings the wages of the general laborer about the pulp and paper mills to the wartime peak of 54 cents, and this rate, and that for other workers, is the same as those agreed on recently by the Great Northern Paper Company, which is regarded as one of the leading producers of newsprint in the United States.

The highest rate in the schedule is $2.06 an hour, to be paid to the boss tenders of the big machine in the Great Lakes Pulp and Paper Company at Fort William. This machine is 304 in. wide, which is the greatest width of any Fourdrinier in the world. Other machine tenders will receive from $1.45 an hour up, and are paid on tonnage, the width of the machine and its speed.

President Burke stated that he had signed an agreement with the Ontario pulp and paper companies for the last twenty years, and had never had a serious labor dispute. The union had very fair-minded employers with whom to do business. Mr. Burke added that the pulp and paper mills of the southern portion of the United States will, within fifteen years, compete with the mills of Ontario and the northern part of the American continent, owing to the growing development of Southern pine in turning out pulp and paper.

Mr. Burke left for Burksport, Maine, and Woodlawn, Maine, to negotiate similar agreements with companies manufacturing newsprint.

Returns From Southern Trip

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 26, 1937—A. G. Poundsford, of Port Arthur, Ont., division manager of Provincial Paper, Ltd., and Mrs. Poundsford, returned recently from an extended holiday trip to the Southern States and Mexico. Mr. Poundsford states that unusual activity extends throughout the whole paper trade across the border. At Houston, Texas, he visited the newest bleached kraft mill, where Southern pine is being used. He said that the method was proving a complete success, the product being shipped to other mills for the production of high-class book and coating paper. Mr. and Mrs. Poundsford visited Havana, and took a trip through the Panama Canal to Acapulco, and thence to Mexico City. They returned to the United States through San Antonio.

Hammermill Film Shown

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 3, 1937—The annual meeting of the National Association of College Stores, held at the Palmer House, Chicago, from April 26 to 29, attracted the attention of quite a number of paper concerns who find the college book store field an interesting one from a merchandising angle. Fifty manufacturers and jobbers participated in the exhibit of products which featured the extremely well attended convention.

The Chicago Paper Company presented its line of College Book Store Papers including mimeo, hectograph, typewriter, fillers, ruled papers and special items. E. O. Berg and Dean Collar were in charge of the display. Montag Brothers of Atlanta, Georgia, exhibited the well known "Pall Mall" line of "Fashionable Writing Papers" with E. B. Gause present to take care of requests for information and sales. The Osborn Paper Company of Chicago, presented a complete line of college book store paper merchandise under the direction of Ed Levinson. White & Wyckoff sent Mr. James Smith and F. O. Becker to show the comprehensive stationery line of that firm.

Another feature of the four day program was the showing of a moving picture on the making of paper through the courtesy of the Hammermill Paper Company. A second detail, of interest to manufacturers, was the report of the Committee on Relations with Manufacturers of Supplies indicating the need of close cooperation between the manufacturer and retailer in solving the many present day perplexities of merchandising.

Steam Condenser for Champion

Condenser Service and Engineering Company, Inc., furnished one steam condenser for the main turbine of the Champion Paper and Fibre Company's new mill at Houston, Tex., having a total cooling surface of 5,000 sq. ft., particulars of which were omitted in the article on the new mill in the March 25 issue of the PAPER TRADE JOURNAL.

The unit was designed to condense 50,000 pounds of vapor at 26 inches Hg. to 29 inches Hg. using 5,000 GPM of process water for cooling. The copper bearing steel shell was constructed horizontally. Admiralty metal tubes were specially rolled into both Muntz metal tube sheets. Water boxes were copper bearing steel plate fabricated for an operating pressure of 50 pounds per sq. in. on the cooling water side.

The company shipped two condensate pumps of the double suction type having split horizontal cases, direct connected to splash-proof motors, and designed to by-pass condensate through a liquid level controller back into the very large deaerating hot well during periods of partial steam load. The deaerating hot well is integral with the main condenser shell.

Condenser Service and Engineering Company furnished the associated twin type stage air ejectors with surface intercondenser and aftercondenser.

The main condenser over all height from flange connection on the exhaust dome to the bottom of the deaerating hot well is 10 feet 1 inch. The over all length is 23 feet 2 inches. The exhaust dome was offset on both center lines to suit the limited spaces allowed, the job being tailored throughout to suit the specific physical conditions in the power plant.

Canadian Newsprint Exports

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 26, 1937 — March was another banner month for the newsprint industry, for from the point of view of value, newsprint exports reached the highest figure for years. The exports amounted to 5,898,695 cwt., valued at $10,659,613. The nearest recent approach to the latter figure was in November last, when the value amounted to $10,340,246, though the volume was 17,958 cwt. larger. In March, 1936, the exports amounted to 5,131,272 cwt., valued at $8,794,454, so that this year sees a jump of nearly $2,000,000 in the month's exports. Of the total the United States took 4,968,855 cwt., valued at $8,989,662. Of the 31 other countries to which newsprint was exported the United Kingdom is credited with $547,279; Australia with $316,745; Argentina with $275,635; New Zealand with $88,863; Japan with $78,405; British South Africa with $47,473; China with $56,807; Cuba with $61,171; Hong Kong with $28,909; Belgium with $22,137; Hawaii with $15,897; Mexico with $24,948; Philippines with $15,602; Uruguay with $18,384; and Venezuela with $16,475.

Total exports of pulp amounted to 1,639,667 cwt., valued at $3,633,388, accompanied with 1,508,523 cwt., valued at $3,024,975 in March, 1936.

For the twelve months ending March 31st (the end of the Dominion's fiscal year), the exports of pulp were valued at $33,210,237, compared with $28,103,970 in the previous year, and the total paper and manufactures of paper at $117,818,478, as against $97,094,240. Thus, the value of the exports of pulp and paper products was $151,028,715, as against $125,198,210, an increase of $25,830,505.

E. B. Severs New Post

E. B. Severs has returned to active service in the organization of United Engineers and Constructors Inc. and is again a member of their engineering staff in the Power Engineering Division.

Mr. Severs is a graduate of Lafayette College and his experience covers a period of thirty years in design, construction, operation, and report work.

Early experience was gained with the J. G. White Engineering Corporation and later with the Pennsylvania Railroad. He then became associated with the United Gas Improvement Company and in 1928, when United Engineers and Constructors Inc. was formed, Mr. Severs continued in charge of important work done by the engineering staff of the latter organization.

He is a member of The Franklin Institute and of The American Society of Mechanical Engineers.

Swedish Pulp Almost Sold Out

STOCKHOLM, April 19, 1937—Scarcely ten per cent now remains unsold of Sweden's 1937 production of sulphite pulp, while the sulphate pulp is practically sold out. Of the 1938 production 55 to 60 per cent of the sulphite and about 70 per cent of the sulphate already are sold. Prices are firm, with a tendency to rise. The Swedish sales of wood products for delivery this year now amount to 610,000 standards. Only 230,000 standards of Sweden's quota under the international timber export agreement remain to be sold.

Sisson Returns From South

[FROM OUR REGULAR CORRESPONDENT]

POTSDAM, N. Y., April 26, 1937 — George W. Sisson, Jr., head of the Racquette River Paper Company, recently visited a number of mills and laboratories in Georgia and it is his opinion that the pulp and papermaking industry in the South is advancing rapidly. He said that slash pine is being used extensively for laboratory experiments, this species growing rapidly and frequently reaching pulpwood size in twenty years. He points out that a comparison of the Southern pine and the native trees of Northern New York reveals a great difference. It requires from fifty to one hundred years to grow a spruce tree eight inches in diameter in the Northern section, he said. There is a great difference in the cost of pulpwood in the South as compared to Northern New York, according to Mr. Sisson, who claims that Southern firms are able to buy the wood at the mill for $4.50 a cord. In this section mill owners pay approximately $15 a cord. The growing scarcity and high cost of pulpwood in this section, its slow growth as compared with the rapid reproduction in the South combined with the development of processes to use Southern pine, will make it increasingly difficult for the mills in the North to compete particularly in any of the ordinary grades of paper, Mr. Sisson believes.

Petroleum Products and Paper

John Tuttle, of the Engineering Department of the Standard Oil Company of New Jersey, was the guest speaker at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, which was held last Monday in the Florentine Room of the Hotel Lexington, New York.

Mr. Tuttle described the various petroleum products used in the manufacturing of paper and stated that 150,000 tons enter the industry per annum. He described the use of petroleum in beater applications, softening for tissue and matrix paper. Mr. Tuttle explained that the converter was a large user of mineral oil and described the use of petroleum products in glassine, waxed wrapping papers and waterproof papers.

The speaker stated that color printing was accomplished on a slip sheet treated with parrafine. He also noted the large use of mineral oil used to impart transparency to lamp shades and declared that it was also used largely in carbon paper, paper matches, safety bags, milk and orange juice containers (130,000,000 of these containers were used in 1935) and roofing felt.

Another large use for petroleum products is in the manufacture of newsprint ink. Mr. Tuttle mentioned that the Hearst publications alone used 18,000,000 pounds of this ink per year, which affords an idea of how great a quantity of mineral oil is used in this industry.

Eveleth Paper Chartered

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., April 26, 1937—The Eveleth Paper Company has been incorporated with a capital of $5,000. Incorporators: Grace E. Robb, Adrien J. Daze, Holyoke, and R. Franklin Kinley, East Longmeadow, Mass.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, of Pulp and Paper Mills

More New Mills for Canada

MONTREAL, Que., May 3, 1937—Announcements of the re-opening of idle mills, extensions to active mills, and the construtcion of new ones continue to come.

In the Nova Scotia Legislature plans of the Mersey Paper Company to extend operations were revealed in an application for permission to increase power resources at a cost of $2,500,000. The company had previously sought permission to increase its power development on the Mersey River at a cost of more than $700,000. Since that time, conditions have improved to such a large degree that the latest application asks for permission to make extensions costing $2,500,000.

It was explained that if permission is granted, the development would permit installation of a third newsprint machine at Brooklyn, N. S., site of the company's newsprint mill. The administration looks with favor at granting permission, it was stated, because of the increased newsprint production and all its attendant economic benefits.

Returning from Montreal to Saint John, N. B., the Hon. F. W. Pirie, Minister of Lands and Mines for New Brunswick, announced that negotiations are proceeding satisfactorily for the construction of two pulp mills in the Chatham-Newcastle region. While in Montreal, it is understood, the Minister conferred with Gen. J. B. White, vice-president of the New Brunswick International Paper Company, which operates the plant at Dalhousie, N. B., as to the part of his company in the proposed development. It is also understood that the negotiations now under way are the building of a mill by the International Company and another for the production of bleached sulphite by the Fraser Companies. The Hon. Mr. Pirie states that a definite announcement will probably be made during May.

In Montreal it is announced that plans are on foot to reopen Quebec Pulp and Paper Corporation's groundwood pulp mill at Chicoutimi after a 7-year's close down.

Other plans, already referred to in the PAPER TRADE JOURNAL, are for the re-opening of the Chandler Pulp Mill in the Gaspe district; for extensive enlargement and improvement of the Howard Smith Paper Mills; for an addition to the pulp mill of the Brown Corporation at La Tuque, Que., and for a rehabilitation program involving an outlay of more than $600,000 by the Bathurst Power and Paper Company which has just resumed the manufacture of newsprint, after confining itself for years to the manufacture of kraft and board products.

Lake Sulphite Construction

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 3, 1937—The construction of the foundations of the new Lake Sulphite Pulp Company's mill near Nipigon, Ont., has been begun, and contracts will be placed within a few days for the mill equipment, including the necessary two drying machines. The cutting and piling of pulpwood for delivery at the mill next fall is being started on the 2,300 square miles of limits of the company, some of which are within five miles of the plant. Low cost wood will be secured from the settlers lands immediately adjacent to and directly across the Nipigon River from the mill.

More than two hundred men are employed on construction work, and this number will be increased as the season progresses. A railway spur will be built connecting the mill site with both the C. N. R. and the C. P. Railways at a point five miles west of the town of Nipigon. There will be built deep water docks, affording facilities for lake shipping, and also for ocean tramps serving the European pulp market.

Red Rock is the name by which the new town which is being laid out will be incorporated. It is expected that when the plant begins production in 1938 the population will be in the neighborhood of 3,000.

Sulphite Mill Improvements

Improvements to the sulphite mill of the Wausau Paper Mills Company are being undertaken. These cover the installation of the Fiber Making Process Circulating System, and elimination of wet machines with new Oliver Young washers and thickeners, and slushing of all sulphite. A new two-stage Hypochlorite Bleaching System is also being considered.

New Pacific Falls Warehouse

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 3, 1937—Pacific Mills, Ltd., which operates a large newsprint plant at Ocean Falls, B. C., 300 miles north of Vancouver, will build a $200,000 warehouse at Ocean Falls to accommodate growing production volume. The warehouse will be used largely to store export shipments.

Construction News

Lee, Mass.—Smith Paper, Inc., manufacturer of tissue and other paper stocks, has plans maturing for new addition to local Eagle Mill on Mill street, to be one-story, 140x160 feet. It will be used for

expansion in the machine department. Building contract will be awarded soon and work placed under way. It is reported to cost over $100,000, with equipment. Company is also considering another one-story addition to same mill, reported to cost close to $50,000. R. A. Packard is company engineer in charge.

Mosinee, Wis.—The Mosinee Paper Mills Company has approved plans for new one-story addition to mill, to be used primarily for pulp storage and distributing department. General contract for erection has been awarded to the C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis., and work will be placed under way at once. No estimate of cost has been announced.

Baltimore, Md.—The Industrial Paper Company, 501 Water street, has leased a three-story building at 613-15 West Pratt street, and will remodel and improve for early occupancy. It will be used primarily for storage and distributing service.

Newark, N. J.—The Advance Paper Box Company, Inc., recently organized with capital of 100 shares of stock, no par value, to manufacture a new line of paper boxes and containers of special type and design, has arranged for lease of one-story industrial building at 214-16 Johnson avenue, totaling about 6000 square feet of floor space, and will equip and occupy for new plant. It is proposed to have unit ready for operation at early date.

Kalamazoo, Mich.—The Detroit Paper Products Company, 5800 Dominee street, Detroit, Mich., manufacturer of paper specialties, has negotiations under way for acquisition of former mill of Western Board & Paper Company, Kalamazoo, idle for a number of years past, now held under joint ownership by the Michigan Carton Company, Battle Creek, Mich., and Mac-Sim-Bar Paper Company, Otsego, Mich. It is expected that property will be secured at early date. New owner will occupy for a new branch plant, primarily for the production of a special type of paper board product. Improvements will be made in mill, including complete reconditioning and installation of equipment for large capacity.

Lockport, N. Y.—The Upson Company, Upson Point, manufacturer of pulp board products, fiber specialties, etc., has let general contract to Laur & Mack, 1400 College avenue, Niagara Falls, N. Y., for addition to steam power house at mill, recently referred to in these columns, reported to cost close to $50,000, including equipment. Work will be placed under way at once. Charles A. Upson is president.

Bellingham, Wash.—The Puget Sound Pulp and Timber Company, Army and Laurel streets, has plans under way for expansion and improvements in sulphite pulp mill, including construction of new addition and installation of considerable new equipment. Increased capacity will be carried out. Entire project is reported to cost in excess of $250,000. Company has been negotiating with city for increase in water supply for service at mill, with gross facilities estimated at 40,000,000 gallons per day, and municipality is planning to arrange a bond issue of $1,000,000 for construction of new pipe line for this purpose and installation of other water supply facilities. Barr & Cunningham, Spalding Building, Portland, Ore., are consulting engineers for the water project. Ossian Anderson is president of Pugent Sound Pulp and Timber Company.

Painesville, Ohio—The Industrial Rayon Corporation, West Ninety-eighth street and Walford avenue, Cleveland, Ohio, manufacturer of cellulose rayon products, has plans nearing completion and will take bids on general contract in May for proposed new mill in Painesville Township, near Painesville, Ohio, where large tract of land was acquired a number of months ago. Plant will consist of a main one-story and basement mill, totaling about 400,000 square feet of floor space, chemical building and chemical laboratory, steam-operated electric power plant, machine shop and other units. Entire project is estimated to cost over $7,500,000, including buildings and machinery. Wilbur Watson & Associates, 4614 Prospect avenue, Cleveland, Ohio, are architects and engineers. Hiram Rivitz is president.

Holyoke, Mass.—The Eveleth Paper Company, 200 Race street, recently organized, plans operation of local plant for manufacture of paper products for school service, writing papers and kindred products. R. Franklin Kinley is president. G. F. Robb is treasurer.

Marseilles, Ill.—The National Biscuit Company, Carton Division, has awarded general contract to the E. L. Archibald Company, 111 West Washington street, Chicago, Ill., for extensions and improvements in paper box and carton manufacturing plant at Marseilles. Work will be placed under way at once. No estimate of cost has been announced. Main offices of company are at 449 West Fourteenth street, New York, N. Y.

Erie, Pa.—The Hammermill Paper Company, East Lake road, manufacturer of writing papers, etc., has plans for new one-story addition, to be used for storage and distributing service. No estimate of cost has been announced. Work is scheduled to begin at early date. A. W. Bartz is construction engineer in charge.

Jacksonville, Fla.—The National Container Corporation, Review and Borden avenues, Long Island City, New York, N. Y., manufacturer of corrugated paper boxes and containers, has arranged for a bond issue of $2,000,000 and 175,000 shares of common stock, to total about $3,576,000, of which an estimated fund of $3,260,000 will be used for construction of proposed new kraft pulp and board mill at Jacksonville, previously referred to in these columns. Work on project is being placed under way by the Merritt-Chapman & Scott Corporation, 17 Battery place, New York, which has secured general contract for mill.

Rochester, N. Y.—The Eastman Kodak Company, Kodak Park, Rochester, has arranged fund of about $12,000,000 for expansion and improvements in plants during 1937, including development of increased facilities for photographic paper and film production at local mill. Work will begin soon on new eight-story addition to Rochester plant, 60x120 feet, reported to cost over $400,000, with equipment, to be followed by other plant units. A considerable part of fund noted will be used by company at branch mill at Kingsport, Tenn., operated in name of Tennessee Eastman Corporation, specializing in production of cellulose products, etc. Work has begun on large new unit at last noted plant for the manufacture of acetate staple fiber, and other expansion and modernization will be carried out later. This plant is now giving employment to approximately 4500 persons in various depart-

ments and is operating at a capacity schedule. Thomas J. Hargrave is vice-president.

Chatham, N. B.—The New Brunswick International Paper Company, Ltd., Dalhousie, N. B., is considering early construction of a new ground wood and sulphite pulp mill at Chatham, consisting of several one and multi-story units, to be equipped for large capacity. It is proposed to begin erection at early date. New mill is reported to cost in excess of $500,000, including equipment.

Hamilton, Ont.—Gerald T. Shipman Company, Ltd., London, Ont., manufacturer of paper products has plans under consideration for early construction of new mill on waterfront at Hamilton, where tract of land has been selected. It will comprise a main one and multi-story unit, with several auxiliary buildings, and is estimated to cost close to $500,000, including equipment.

Toronto, Ont.—Staunton's, Ltd., 944 Yonge street, manufacturer of wall papers, has work nearing completion on new plant at Leaside, Toronto, in course of erection for several months. New mill is of two-story type, totaling about 100,000 square feet of floor space, and will be the most modern and efficient mill for this character of production constructed up to this time. Equipment and facilities will provide for employment of close to 250 persons. It is proposed to begin operations at new plant at early date.

La Tuque, Que.—The Brown Corporation, 71 St. Peter street, Quebec, Que., has plans under way for new addition to kraft fiber pulp mill at La Tuque, to be equipped for large increased capacity. New unit is reported to cost over $250,000, including equipment. A new acid reservoir also will be constructed at the mill, to cost approximately $85,000. Work on latter unit is scheduled to begin at once.

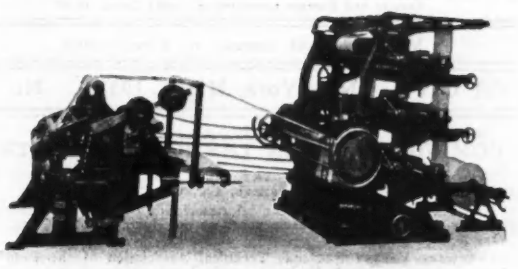
Algoma, Ont.—The Huron Forest Products, Ltd., recently organized by Canadian and American interests, has concluded arrangements for acquisition of site and construction of new sulphite pulp mill at Algoma in Algoma-Manitoulin area. The initial unit will comprise a large group of one and multi-story units, with power station, pumping plant, machine shop and other structures, including extensive storage and distributing buildings. It is estimated to cost close to $3,000,000, including machinery. Actual construction is scheduled to begin in 1938. George H. Mead, president of the Mead Corporation, Chillicothe, Ohio, and John G. Sutherland are interested in new company and project.

London, England—Celotex, Ltd., recently organized as an English affiliation of the Celotex Corporation, 919 North Michigan avenue, Chicago, Ill., manufacturer of insulating board, wall board and kindred products, has concluded negotiations for purchase of tract of land at Grand Canal and North Circular road, Wembley district of London, as site for a new mill, for which plans will be prepared at once. It will consist of several one and multi-story units, equipped for initial output of about 3,500,000 feet of board products per month. Erection is scheduled to begin this spring. New mill will cost about $1,250,000, including equipment. Financing for project has been completed. B. G. Dahlberg, president of Celotex Corporation, will be one of officials of new company.

Aniline Printer and Rewind

Another paper converting unit has been added to the Potdevin line. It consists of combination multi-color aniline web printing press coupled with a newly designed slitter, sheeter and rewind. This compact, sturdy unit is entirely automatic — a push of the starter button, after the plates have been set up for proper register, and the machine will deliver an attractively printed roll of paper (slit if desired), or sheets, as the case may be.

A special feature of the rewind is that it is equipped with an automatic stop. This stop may be adjusted beforehand so that when the printed roll reaches a certain diameter both the aniline press and the rewind automatically stop. The slit rolls



NEW UNIT IN POTDEVIN LINE

are rewound on a common shaft without interweaving. This shaft is collapsible for use without cores. For some users the rewind is constructed with two rewind shafts. The sheeter (which is adjustable as to size of sheet desired) is a compact section making use of the vacant space between the aniline press and the rewind. The web is cut into sheets by a large rotary knift and carried on canvas belts to the delivery table which sets between the press and rewind when the sheeter is in use.

The aniline printing press, described previously in these columns is the same satisfactory type being used generally in paper mills and bag factories in connection with Potdevin high-speed paper bag machinery. Its simplicity of operation, its low running costs and the high quality work which it produces assure the purchaser of a efficient, profit-earning machine.

This combination general utility unit will round out the equipment of any progressive paper jobber, envelope manufacturer or bag maker, permitting the sale of a larger line of finished products without increasing raw material inventory. Potdevin Machine Company is located at 1223 38th street, Brooklyn, N. Y.

Von Ehrn Joins Holyoke Card

The Holyoke Card and Paper Company has engaged the services of Carl von Ehrn to serve as designer and stylist for covering papers, greeting card papers, photomount papers, trade-mark papers and allied lines.

Mr. von Ehrn has under his control several interesting and practical processes for the production of decorated papers in which exclusive designs can be had without the cost of expensive rollers, and in a small or large quantity.

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY—Fall Convention, DeSoto Hotel, Savannah, Ga., Oct. 18-20, 1937.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Meeting, Springfield, Mass., June 23-25.

BUSINESS RECOVERY

The state of the Federal budget has become the central feature of the recovery problem, states the current issue of The Guaranty Survey. Tangible evidence has been given that the time for deficit financing to stimulate recovery has passed. Only when vigorous and effective steps toward retrenchment in Government expenditures are taken can business proceed with reasonable assurance that recovery will not develop along radically unsound lines.

The most significant feature of the Treasury's current position is not that receipts have fallen below expectations but that the increase in receipts has been offset by an even greater rise in expenditures, together with the fact that no real determination to balance the budget has yet been shown.

The President's letter of April 13 and his message of April 20 seem to indicate a realization of the need of gaining greater control over the general expenditures, as well as of the relief expenditures, of the Government; and it is to be hoped that they mark the beginning of a more determined campaign than has yet been made to bring about a fundamental change in the position of the Treasury.

The situation now calls not for stimulation but for restraint, and the first step in effective restraint must be a balanced budget.

The unexpectedly low level of recent income tax receipts further beclouds the prospect of a balanced budget in the near future and made necessary the thorough revision of budget estimates. A comparison of receipts and expenditures of the Treasury for the fiscal year to date reveals that receipts during the first nine months were much larger than a year ago, while expenditures for recovery and relief showed a substantial decrease. But the saving in relief was much more than offset by a sharp increase in general expenditures, despite the fact that expenditures for public debt retirements were smaller this year than last.

The total excess of expenditures for the first nine months of the current year was $72,000,000 larger than a year ago, despite the large increase in receipts. In other words, instead of moving toward a balanced position during the year, the Treasury has moved away from it.

Whatever may have been the occasion for the drop in Government bond prices, it is certain that bank holdings of Government securities have been decreasing gradually for several months and that the decline became very rapid in the second half of March. The decline in prices was the sharpest since the drop in the latter part of 1931 following the abandonment of the gold standard in Great Britain. It began, however, from an unprecedentedly high level, with the result that prices at present, while the lowest in a year and a half, are still higher than at any time prior to 1935.

The Open Market Committee of the Federal Reserve System announced on April 4 that it was prepared to make open-market purchases of Government securities for the account of Federal Reserve banks "in such amounts and at such times as may be desirable." Such purchases, according to the announcement, would be made with a view to exerting an influence toward orderly conditions in the money market and to facilitate the orderly adjustment of member banks to the increased reserve requirements effective May 1.

In line with this policy, the Federal Reserve banks began immediately to purchase Government securities and by April 14 had augmented their holdings by $57,000,000, showing the first significant increase in this item since the beginning of 1934.

The committee stated that its new policy is in conformity with that announced by the Board of Governors in January, whereby open-market operations were to be used to effect such changes in member bank reserves as might be deemed in the public interest after the increased reserve requirements should become effective.

The fact remains, however, that the new policy places the Federal Reserve system in the position of increasing excess reserves of member banks by purchasing Government securities while, at the

same time, lowering those reserves by increasing reserve requirements. Meanwhile, the Treasury helps to prevent further increases in reserves by its gold sterilization policy.

This situation is a reflection of the underlying contradiction involved in the joint process of borrowing and spending money on the one hand and of trying to prevent over-expansion of credit on the other. The spending of money borrowed from the banks increases bank deposits, and reserve requirements are raised to prevent over-expansion.

The creation of additional bank deposits by this borrowing and spending process, without a corresponding increase in the volume of output of commodities, threatens to raise prices, attracts foreign capital to this country, and swells bank reserves; and incoming gold is sterilized to check the movement.

The increase in reserve requirements causes interest rates to rise; Government security prices fall, and excess reserves are increased again by open-market operations to support the bond market.

Fundamentally, the difficulty arises from the fact than an effort is being made to undo with one hand what is being done with the other. Borrowing and spending by the Government increase bank deposits, and purchases of Government securities by the Federal Reserve banks increase member bank reserves.

At the same time, increasing reserve requirements reduces excess reserves, while gold sterilization prevents incoming gold from increasing those reserves. The whole situation illustrates the difficulty of bringing about certain changes in financial conditions without incurring the natural consequences of those changes.

Chicago Paper Business Steady

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 3, 1937—Chicago market observers are of the belief that a temporary—but by no means marked—lull may be expected in this area during the summer months. The recession is not expected to be anything other than seasonal and is certainly not considered as having any particular effect on the undercurrent of strength now evident. Further, observers feel that the Fall period will be materially buoyant and that new peaks in prices may be expected during that time. The Chicago markets indicate that kraft and book back logs are continuing to increase and that sulphites and groundwoods retain a firm position with the ground wood business expected to further improve due to New uses on ground woods by commercial firms, including the telephone units in this locality.

Cover papers retained recent advances. Bonds and ledgers were in fair demand though reporting as tapering off as the Spring commitment season terminates. Newsprint was about the same as last week. Board prices were strong to upward. Waste prices fluctuated slightly, particularly in old news and mixed paper grades, according to local reports.

Production Ratio Report

The following statistics are based upon paper production reports to the American Paper and Pulp Association:

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3%(c)	76.1%	65.8%	.....
February	90.1%(c)	77.9%	70.0%	.....
March	90.2%(c)	76.0%	70.5%	.....
April	.....	82.3%	70.0%	.....
May	.....	81.6%	69.4%	.....
June	.....	80.7%	72.3%	.....
July	.....	77.3%	64.9%	.....
August	.....	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
Year Average	.....	81.3%	70.5%	.....
Year to Date First 16 weeks	90.5%(c)	77.6%	68.8%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*April 10	91.8%(c)	April 11	82.9%
*April 17	93.0%(c)	April 18	82.0%
*April 24	91.9%(c)	April 25	83.1%

The following statistics show the number of mills reporting by ratio groups:

Ratio Limits	Number of Mills Reporting, Current Weeks: April 10, 1937	April 17, 1937	April 24, 1937
0% to 50%	42	36	26
51% to 100%	277	269	200
Total Mills Reporting	319	305	226

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported on January 4, 1937 Machine Improvement Survey.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

Mos.	1937	1936	1935	1934	Mos.	1937	1936	1935	1934
Jan.	80%(e)	61%	61%	....	July	....	69%	59%	....
Feb.	86%(e)	67%	67%	....	Aug.	....	75%	65%	....
Mar.	....	68%	67%	....	Sept.	....	76%	69%	62%
Apr.	....	70%	61%	....	Oct.	....	82%	76%	63%
May	....	68%	61%	....	Nov.	....	79%	70%	56%
June	....	68%	65%	....	Dec.	....	74%	60%	52%

Week end. Mar. 6, 1937—86%
Week end. Mar. 13, 1937—84%
Week end. Mar. 20, 1937—87%
Week end. Mar. 27, 1937—88%
Week end. Apr. 3, 1937—85%
Week end. Apr. 10, 1937—87%
Week end. Apr. 17, 1937—88%
Week end. Apr. 24, 1937—89%

(e) Basic figures revised to include new members of the National Paperboard Association.

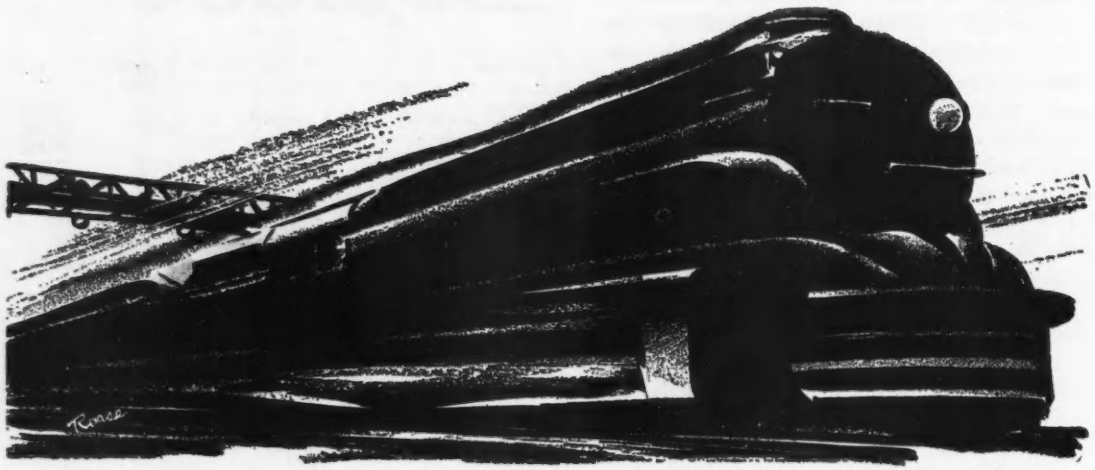
New Merchant's Group

PROVIDENCE, R. I., May 3, 1937—Organization of a permanent local group was discussed at a regional meeting of the New England Paper Merchants Association held Wednesday evening at the Providence Biltmore Hotel. John R. Halkyard, of the Providence Paper Company, presided. The attendance included about twenty members of the trade from Rhode Island and Southeastern Massachusetts.

The following addressed the meeting: F. Bendel Tracy, president of the National Paper Trade Association of the United States; Frank H. Winter, president of the New England Paper Merchants Association; Arthur H. Chamberlain, executive secretary of the National Association; John C. Hurd and Frank B. Cummings, executive secretary and treasurer of the New England Association, respectively.

After a thorough discussion, it was voted to hold another meeting on the same subject in the near future.

INDUSTRY TAKES THE NON-STOP ROUTE



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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Determining the Cuprammonium Viscosity Of Pulp*

By F. A. Ennevaara[1]

The cuprammonium viscosity test for pulps and rags has been mentioned in the literature on several occasions, and the work done by numerous investigators has proven the value of this test for the cellulose industries. Ostwald, Hagglund, Parsons, Bialkowsky, Ross, Stamm and Coster are among those who have made contributions and have emphasized the usefulness of the viscosity test in evaluating and controlling pulp quality.

The viscosity of cellulose in cuprammonium solution is measured by special pipettes and viscosimeter tubes or by employing the falling sphere method. However, this last mentioned method is not suitable for low viscosity material, like commercial pulps, unless the concentration of cellulose is high, which makes the solution difficult to prepare.

Clibbens and Geake of the Shirley Institute have made use of the capillary tube and low concentrations of cellulose. The TAPPI Standard Method follows a similar procedure.

The disadvantage of all commonly known methods is the time required for a test, and this is a big drawback when it is desired to make use of the viscosity test in processes such as cooking and bleaching. There are possibly some rapid methods in use by pulp manufacturers, but few have been described in the trade literature. Recently, however, Der Papierfabrikant published descriptions of two methods that are shorter. One of them by Nikitin and Nagrodsky is a rapid viscosity method for unbleached pulp to control the cooking of rayon pulp. Briefly, this method requires bleaching a sample of the unbleached pulp with an amount of bleach calculated from the Bjorkman number. The dried bleached sample is then moistened with a few cubic centimeters of 20 percent NH_4OH and dissolved in cuprammonium solution by vigorous shaking for ten minutes in a dark bottle containing a steel ball. A viscosity tube is employed for the measurement. The test can be made in 2 hours and the results are reported to be sufficiently accurate for operations. The authors claim that this control is of value because two cooks with the same lignin content do not always have the same viscosity.

The other method by Fabel uses 12 grams of copper, 200 grams of NH_3 and 2 grams of glucose per liter. Shredded samples of pulp with cuprammonium solution are put into dark bottles provided with glass stoppers. In a specially designed machine, the bottles are given 60 shakes per minute for 15 minutes, which is considered sufficient for complete dissolving. An Ostwald Viscosimeter with specified water efflux is used to measure the viscosity, which is expressed in Ost grade. This method takes about one hour and is reported to give dependable results except with over bleached pulps.

The rest of this paper will be devoted to a description of a rapid method based on the TAPPI standard and which makes use of cuprammonium solution of similar strength and also uses standard viscosity tubes. Results can be obtained within half an hour and the method has been applied successfully to process control. Duplicate samples usually check within 3 to 4 percent.

Equipment

The cuprammonium solution is stored in a half-gallon, black painted aspirator bottle, surrounded by a water jacket and the solution kept under a head of 2 to 3 feet of water. By opening a ground-glass stop-cock, the solution is forced into a 50 cc's filling burette for accurate and convenient measuring.

Fig. 1 shows a sketch of this storage and cooling ar-

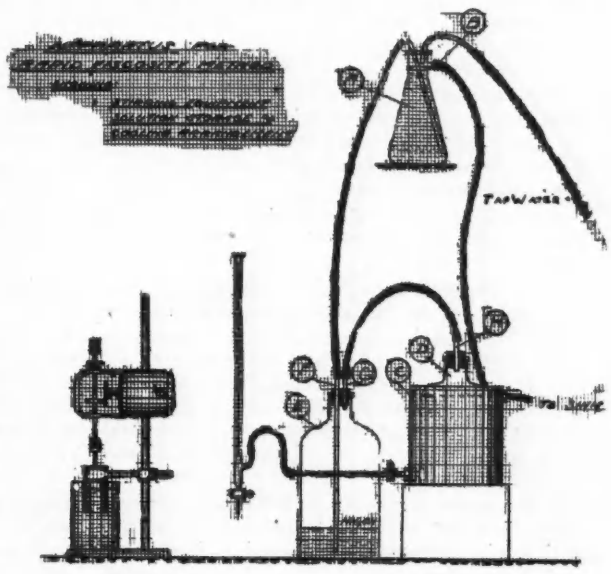


FIG. 1.

* Presented at the meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, Portland, Ore., Nov. 7, 1936.

[1] Member TAPPI, Chemist, British Columbia Pulp and Paper Company, Port Alice, B. C.

rangement. A suction flask (A) is placed on a shelf about 2 or 3 feet above the desk and tap water is kept running into the flask to keep it full. There is a continuous overflow through the jet (B) to the water jacket (C) of the aspirator bottle (D) and an overflow from the cooling jacket to the sink. The pressure chamber (E) is a half gallon bottle placed on the desk and provided with a two-hole rubber stopper, through which two glass tubes pass. One of these (F) goes to the bottom of the bottle, while the other tube (G) is shorter and connects with the glass tube (H) by means of rubber tubing. The aspirator bottle is filled with the cuprammonium solution while the pressure chamber is partly filled with concentrated NH_4OH. Both bottles are well sealed and pressure is maintained by joining (A) with (F) by means of rubber tubing and bent glass tubing. By using this arrangement in routine work more reliable results are obtained.

The pulp viscosity solution is prepared by vigorous stirring in a small monel or steel cylinder with a tight fitting screwed cover. The inside diameter of the cylinder is 1⅜ niches and the height 2⅝ inches while the wall thickness is ⅛ inch. The stirrer consists of a steel or glass rod with the lower end flattened and bent to form an arm, about ⅜ inch in length and at 90 degrees to the shaft. It is curved slightly to establish a downward flow of the solution in the centre of the cylinder. The cover has a ½ inch hole for stirrer shaft and packing, which consists of a rubber stopper through which a ⅛ inch hole has been bored. The stirrer is driven by a 1/40 h. p. motor with a friction disc drive, which allows of variable speed.

As mentioned earlier in this paper, the viscosity tubes have similar specifications to those of the TAPPI standard method except that the steel pellet is not required. To standardize these tubes for the rapid method it is first of all necessary to have the equipment for TAPPI standard viscosity method and then run comparative tests on the same pulp using the TAPPI standard method and also using this rapid method. From these tests it is possible to draw a curve showing the relation between the standard cuprammonium viscosity test versus the efflux time for a tube using the rapid method. This chart is then used for determining the viscosity of unknown pulps.

For quick routine work it is necessary to make up another chart that serves for consistency corrections after the actual moisture content of the sample has been determined.

Method

A well washed sample of pulp from the bleacher or a dried sample from the machine is disintegrated and three or four thin sheets are made on a sheet machine, lightly pressed, and hung for about 5 minutes in a blower oven, the temperature of which is maintained at 105 degrees C. The sheets are then removed and cooled for 2 or 3 minutes, after which they are cut into squares of about ⅛ to 3/16 inch.

The squares are put into a sample jar and well mixed. Two samples are accurately weighed out. A 0.5 gram sample is used for determining the moisture and dried in an oven for 30 minutes at a temperature of 110 degrees C. The second sample weighed out for viscosity test is 0.5376 g. which corresponds to 0.5 g. a 7 percent moisture content. This weight taken will vary with local conditions, such as sheet making, drying and relative humidity conditions.

The sample is placed in the mixer, 50 cc. of cuprammonium solution added from the burette and the cover with stirrer screwed on. The mixer is clamped to a stand and the stirrer connected to the motor drive. A small water bath is placed under the mixer and filled with water at 20 degrees C. The motor is started and the stirring shaft runs at a speed of 4500 r. p. m. for exactly 10 minutes, after which time the pulp is completely dissolved and the motor stopped. Three more minutes are allowed for deaerating the solution. The mixer is taken from the stand and the cover and stirrer removed, the temperature of the solution checked and corrected to 20 degrees C.

The solution is now poured into the viscosity tube and since the capacity of the tube is approximately 20 cc. two determinations can be made from each mix and the average efflux time is noted. The approximate viscosity can now be obtained from the previously mentioned viscosity chart, and as soon as the moisture content of the sample has been determined, a small correction, if necessary, can be made to the viscosity from the consistency correction chart.

It has been found that there is no effect on viscosity results from small variations in stirring speed or time, but temperature during the dissolving period should be maintained at 20 degrees C. Lower temperatures seem to give higher viscosity values and higher temperatures give lower viscosity.

The method described above should not be considered as an attempt to replace the standard method, but merely as an aid for control purposes. As such, the method has proved to be of value in maintaining pulp quality, especially if the product is intended for rayon or other industries requiring strict specifications of their raw material.

American Pipe Manual

Attractively bound in semi-flexible leather covers, the Tenth Edition of the American Pipe Manual has just come from the press and is now ready for distribution, it is announced by The American Cast Iron Pipe Company, Birmingham, Ala.

Containing 205 pages held together by the new "plastic" binding which permits the pages to lie flat when the book is opened, this latest edition of the Manual covers several products now listed for the first time, including 2 inch cast iron pipe (regular b&s, prepared joint, and mechanical joint), 2 inch cast iron fittings, Mono-Cast Doublex Simplex Pipe, Doublex Sixplex Split Sleeves, and Split Bell Sleeves, the Doublex Simplex River Crossing Joint, the Molox Doublex Simplex Joint, Molox Ball Joint Pipe, Cement-Lined Pipe and Fittings (with extensive data and specifications), Mono-Cast Well Tubing & Casing and Monoloy Threaded Cast Iron Pipe.

General idea of the content of the Manual is gained from the following section titles: Sec. 1, History; Sec. 2, Mono-Cast Centrifugal Pipe; Sec. 3, Bell and Spigot Pipe and Fittings for Water Service; Sec. 4, Bell and Spigot Pipe for Gas Service; Sec. 5, Flanged Pipe and Fittings, Awwa and American Standard; Sec. 6, 2 inch Cast Iron Pipe; Sec. 7, Special Joints for Cast Iron Pipe; Sec. 8, Cement-Lined Pipe and Fittings; Sec. 9, Cast Iron Well Tubing and Casing; Sec. 10, Monoloy Threaded Cast Iron Pipe; Sec. 11, Acipco Cast Iron Columns; Sec. 12, Miscellaneous Tables and General Information for Water and Gas Works Superintendents, Engineers and Contractors.

The Tenth Edition of the manual is profusely illustrated with installation photographs and step-by-step action photographs showing assembly of mechanical joints. For many years a favorite source of technical information for users of cast iron pipe, this new edition promises to be the most popular yet issued. Copies will be sent free on request to any office of the American Cast Iron Pipe Company.

Instrumentation Studies. XIII

Adaptability of the G. E. Reflection Meter as a Color Analyzer

By The Staff of The Institute of Paper Chemistry

PART I

Correlation of results obtained from the General Electric Reflection Meter and the Hardy Color Analyzer

The purpose of the present work was to obtain data on the General Electric reflection meter from which color curves might be drawn, which would correlate closely with those curves obtained on the General Electric Hardy color analyzer[1]. It was realized that were this possible, it would greatly increase the value of the instrument for use in the color control and color matching of dyed papers, as well as making possible an accurate, rapid, and inexpensive objective means of grading colored papers.

The color of a substance in reflected light is determined by the relative amounts of the different wave lengths of the visible spectrum which are reflected from it. Hence, in order to draw a color curve, one must know the effective wave length and the amount of light reflected at that wave length. For the color curve to be representative of the substance only, we speak of the percentage of light reflected for a given wave length from a sample, relative to that percentage reflected from a magnesium carbonate ($MgCO_3$) surface, which is the accepted standard of 100 per cent white. Ordinarily, these color curves are obtained by the use of a spectrophotometer. As an example of this type of measurement, we have the color curves as drawn by the Hardy color analyzer, which is essentially a recording spectrophotometer.

By measurement of the reflectances for the eight filters provided on the G. E. reflection meter, and knowing the effective wave length of the light transmitted by these filters, one is able to draw a color curve. Theoretically, one should expect these curves to be comparable with those drawn by the Hardy color analyzer. As a matter of fact, the G. E. reflection meter color curves obtained by use of the instrument as now furnished to the industry differed from the Hardy color analyzer curves by much more than was to be expected.

However, it has been found possible to obtain color curves on the reflection meter which correlate closely with the analyzer curves. This correlation is achieved by the use of an auxiliary filter which is placed on the dust shield. This filter must transmit as much visible light as possible and must absorb practically all infra-red light from 700 to 1200 millimicrons. For this purpose the regular copper sulphate ($CuSO_4$) filter cell as used in the reflection meter, or the Jena glass heat filter number BG 18, has been found suitable. A more detailed discussion of the theory involved in the use of the reflection meter as a color measuring instrument will be given in the second part of the report.

In order to discuss the accuracy, sensitivity, range, reproducibility, and applicability of the G. E. reflection meter as a color analyzing instrument, a number of samples were chosen for study. These samples were selected as representative of the different ranges of colors and surface characteristics to be encountered by the instrument in its use as a color instrument in the paper industry. Included among these samples are the following:

I. Papers
   a. Newsprint, Poster
   b. Cover
   c. Bond
   d. Coated
II. Colored Carrara Glasses
III. Colored Cellophanes

[1] These instruments will hereafter be referred to as the reflection meter and the analyzer, respectively.

Procedure

In making a color measurement, the standard procedure for the measurement of reflectance as outlined in the reflection meter instructions is followed. The difference, of course, is that the various color filters are successively substituted for the regulation "brightness" filter. In measuring the reflectances of colored samples not fast to light, it is important that the sample is not left over the sample opening longer than is necessary to take a reading.

In the use of the usual Carrara *white* standards, the reflectance of the Carrara standards must be determined in terms of $MgCO_3$ for each of the filters. Since the glass standards are not truly a neutral white, the reflectance will vary from filter to filter. It is apparent that the reflectances of the Carrara standards so determined must be used when measuring any sample against the Carrara whites.

These eight filters cover the visible spectrum in well-spaced steps from 400 to 700 millimicrons. The average wave lengths transmitted by the filters are as follows:

Wheel No.	Wratten No.	Average or Effective Wave-length (millimicrons)
1	49	450
2	Corning Doublet	400
3	76	434
4	75	490
5	74	530
6	73	575
7	72	610
8	71a	650
9	70	680

Experimental Results on Different Types of Paper

The correlation between the reflection meter color curves and the analyzer color curves for identical samples is illustrated graphically by Figs. 1 to 25. The experimental data are presented in Table I.

TABLE I.—REFLECTION METER DATA ON PAPER AND GLASS SAMPLES USING DIFFERENT FILTERS

Filter	Purple Cover	Blue Cover	Green Cover	Yellow Cover	Red Cover	Russet Bond	Blue Bond	Yellow Bond	Orange Coated
1	20.5	32.0	13.0	17.0	8.0	27.0	59.0	14.0	7.0
2	23.0	19.0	13.0	15.0	8.0	25.0	52.0	13.5	7.0
3	22.5	30.5	11.7	14.0	8.5	25.5	57.0	12.5	6.0
4	18.5	25.0	26.5	33.0	4.8	31.0	56.5	20.0	6.5
5	8.0	11.5	33.5	64.0	4.5	41.0	44.0	43.5	12.5
6	5.5	7.0	19.0	72.0	10.0	50.0	33.5	77.0	51.0
7	7.0	6.0	14.0	78.0	28.0	53.0	28.0	86.0	76.5
8	13.0	4.0	16.3	80.0	49.0	56.0	27.0	83.0	77.5

Filter	Green Coated	Yellow Coated	15439	15403	15402	15405	15438	15401	15376
1	38.0	11.5	52.0	48.0	14.0	32.0	18.5	23.0	49.0
2	35.0	9.5	35.0	32.0	15.0	27.0	16.0	19.7	30.0
3	33.0	10.5	48.0	43.0	15.5	32.5	19.0	20.5	35.0
4	55.0	17.0	62.0	55.0	11.5	29.0	15.0	37.0	56.0
5	65.0	51.5	62.0	56.0	16.0	25.5	24.0	58.0	73.0
6	43.0	81.0	52.0	49.0	38.0	36.0	60.0	66.0	76.0
7	31.0	85.0	44.0	43.0	57.0	58.5	76.0	70.5	78.0
8	26.0	81.7	40.0	40.0	64.0	67.0	75.0	71.0	76.0

Filter	15404	15399	15113	Light Cellophane	Dark Cellophane	Green Carrara	Gray Carrara
1	30.0	17.5	23.0	15.0	1.5	35.0	43.0
2	24.0	15.0	19.0	1.0	0.0	58.5	50.0
3	28.0	16.0	20.5	0.5	0.5	41.5	45.0
4	45.0	24.0	40.0	44.0	11.0	37.0	41.5
5	63.5	46.0	65.0	48.0	14.5	50.5	42.5
6	68.5	57.5	70.5	27.0	2.5	47.5	43.5
7	72.0	63.0	73.0	16.5	1.0	37.0	43.5
8	72.5	64.5		14.0	0.0	31.5	44.0

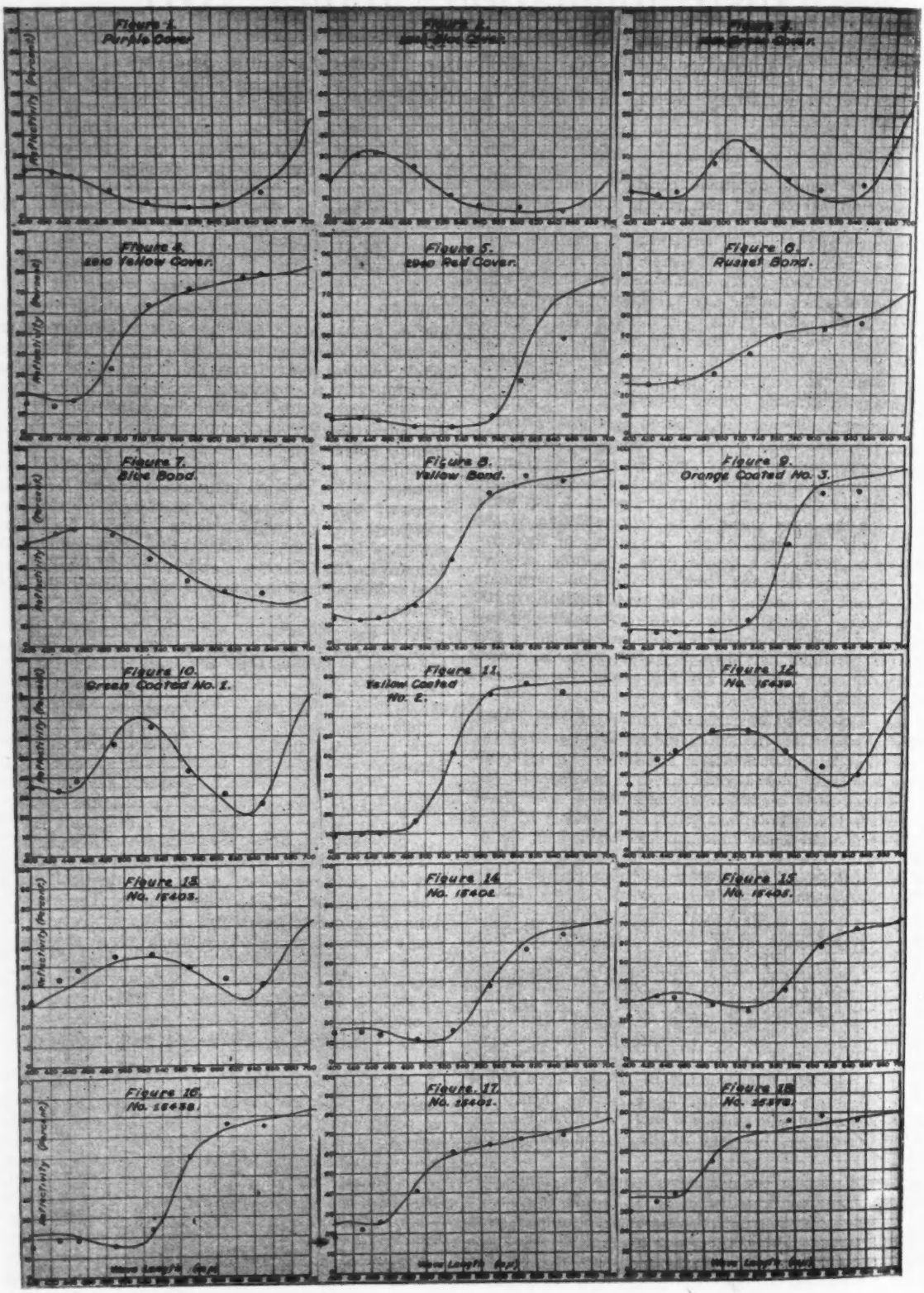
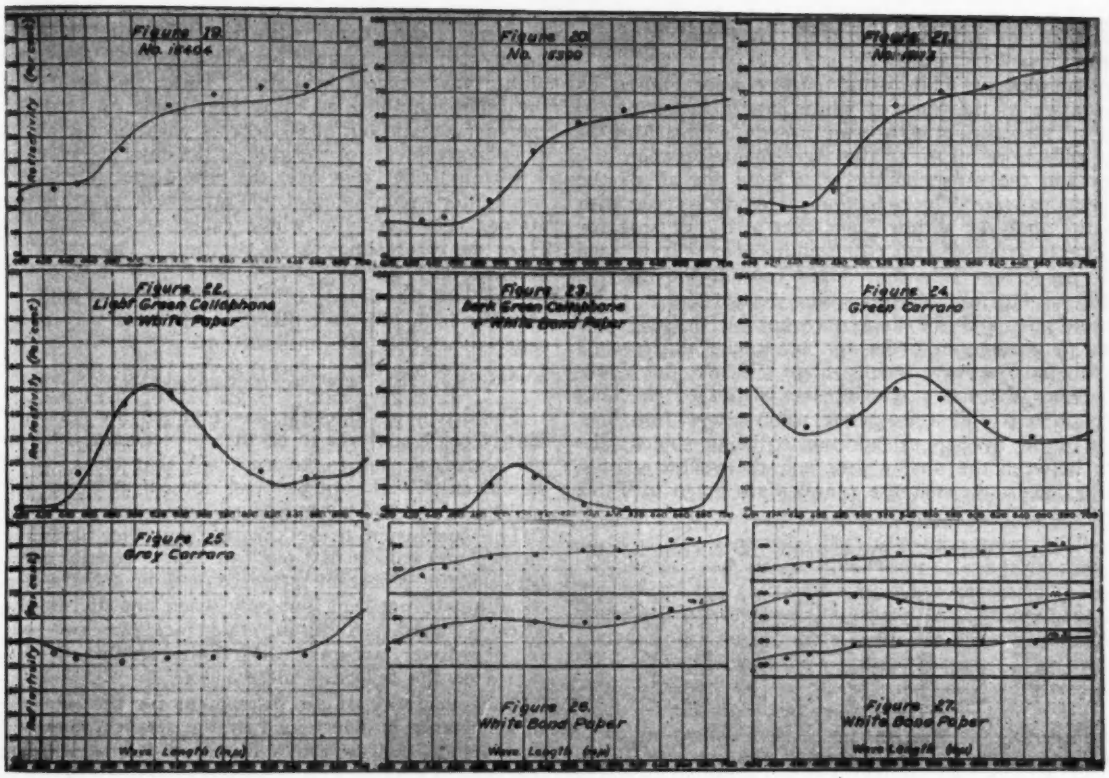


Figure 1.
Purple Cover.
Figure 2.
Light Blue Cover.
Figure 3.
Dark Green Cover.
Figure 4.
1910 Yellow Cover.
Figure 5.
1910 Red Cover.
Figure 6.
Russet Bond.
Figure 7.
Blue Bond.
Figure 8.
Yellow Bond.
Figure 9.
Orange Coated No. 3.
Figure 10.
Green Coated No. 1.
Figure 11.
Yellow Coated
No. 2.
Figure 12.
No. 15430.
Figure 13.
No. 15403.
Figure 14.
No. 15402.
Figure 15.
No. 15405.
Figure 16.
No. 15438.
Figure 17.
No. 15401.
Figure 18.
No. 15370.

FIGS. 1 TO 18.



FIGS. 19 TO 27.

The differences to be observed for the various samples will now be discussed.

Poster Papers

Yellows: Samples 15113, 15483, 15376, 15401, and 15404.

The same type of discrepancy between the two types of curves occurs for all of these yellow poster papers. At 400 millimicrons the reflection meter values are all low by about 15 per cent. For filters 3, 1, and 4, the values are up and down by 5 per cent. From 500 to 650 millimicrons the brightness tester values are higher than those of the color analyzer by a maximum of 5 per cent.

The point to be emphasized here is that the reflection meter curves for these five yellow samples differ among themselves in the same way as do the analyzer curves. This fact then admits of the possibility of differentiating between samples of approximately the same hue and saturation, and actually being able to say in which wave length range the colors differ and by what percentage.

Pink: Sample 15405.

Except for filter 2, the agreement is good to within 5 per cent at the outside.

Salmon and Mandarin: Samples 15438 and 15402.

Again the difference between the reflection meter curves and the analyzer curves is about 5 per cent, except for the extreme violet points at 400 and 430 millimicrons, for which the discrepancy is 20 per cent for the 15438, while for 15402 the values are very close.

Greens: Samples 15403 and 15439.

The reflection meter reflectances are all higher than the analyzer's values by 15 per cent maximum for filter 7, with a discrepancy of 2 per cent in the region from 500 to 570 millimicrons. The results here for filters 1, 2, and 3 are contrasted with the results for the yellows, for which no consistently positive or negative discrepancy could be assigned.

Cover Papers

This series, including samples 2910, 2942, 2940, 2951, and 3352, represent a series of groundwood cover papers of highly saturated color. The colors are red, yellow, green, blue and violet, respectively.

The red sample represents the one exception to good general agreement to be noted throughout this comparison. The results from 400 to 590 millimicrons are in excellent agreement, while the reflection meter points for filters 7 and 8 are low by about 30 per cent.

The two curves for the yellow sample compare in a way similar to that for the yellow poster papers.

The results for the green disagree by a maximum of about 10 per cent for filters 7 and 8. The values are high by 15 per cent for 1, and low by 10 per cent for 4. The rest of the range agrees closely.

The blue sample presents strikingly good agreement with a maximum difference of 10 per cent high for filter 4.

The violet sample presents another case of excellent agreement, except for filter 8, for which the value is about 25 per cent low.

Bond

Three colored bond papers of blue, russet, and yellow are examples of less saturated colors than are the cover papers. The agreement is good to within 7 per cent from 400 to 650 millimicrons for the blue sample, except for filter 8, for which the value was 20 per cent high. For the russet sample, the values disagree by 8 per cent at the outside. Here, as in the case of the blue sample, the reflection meter values are low in the region from 480 to 650 millimicrons. The values for the yellow

sample agree to within 5 per cent over the complete spectrum.

Nine samples of white bond papers were chosen as representative of the hues of white papers to be met in practice. These papers were read directly against $MgCO_3$ on the reflection meter. The agreement between the analyzer and the reflection meter is good for all of the white bond papers. The reflection meter data agree with that of the analyzer within 2 per cent at the outside for wave lengths from 440 to 610 millimicrons. It is seen that the agreement is within 5 per cent at the outside, from 400 to 440 millimicrons. The disagreement is not a constant one, and the data may not be shifted by a constant percentage in order to obtain checking results within this narrow wave length range. Hence, the agreement between these two sets of data allows of checking spectrophotometric data for white papers to within three per cent of the average, in addition to being able to distinguish between the blue whites and the yellow whites. The reflectance data on these samples are given in Table II and Figs. 26 and 27.

TABLE II.—REFLECTION METER DATA ON WHITE BOND PAPERS

Filter	1	2	3	5	6	7	8	9	10
1	81.0	76.5	84.5	76.0	78.0	79.8	82.7	81.8	77.0
2	69.0	67.0	77.4	68.0	71.3	74.0	77.0	74.7	68.8
3	77.5	73.0	82.5	74.0	76.4	77.5	81.0	89.5	73.7
4	85.0	79.5	87.6	78.0	79.0	80.3	85.0	84.4	80.4
5	86.7	78.0	89.0	78.3	76.6	78.0	85.4	86.4	80.8
6	87.8	78.4	90.0	77.8	74.5	77.0	85.6	87.3	81.5
7	88.0	80.0	90.0	79.0	74.5	77.5	86.5	87.7	82.2
8	92.3	83.4	89.5	79.6	75.0	80.0	86.5	88.4	84.0

Coated Papers

The three samples of coated papers designated Coated 1, 2, and 3, and of green, yellow, and orange color, respectively, represent another set of full colors of high intensity. The green curves are seen to agree within 10 per cent over the whole range. From 400 to 470 millimicrons, the reflection meter values are about 8 per cent higher than those of the analyzer. From 470 to 590 millimicrons the values run lower by a maximum of 8 per cent. For filter 7 the values are high by 10 per cent and for 8, 4 per cent low. It is seen that for this green sample there is no consistent disagreement.

The orange sample reflection meter reflectances are low by a maximum of 10 per cent for filter 8 from 540 to 700 millimicrons. From 400 to 540 the values are very close.

The agreement is within 3 per cent at the outside over the complete spectrum for the yellow sample.

Carrara Glasses: Cream Carrara—Gray Carrara—Green Carrara.

The reflectances as read on the reflection meter are from 2 to 10 per cent lower than on the analyzer for the Carrara cream. The largest discrepancy is in the wave length range from 400 to 490 millimicrons.

For the gray sample, which is not truly a neutral gray, the reflection meter reflectance is again low by 5 to 7 per cent, and the 7 per cent discrepancy is at 490 millimicrons.

The green sample affords results which are both higher and lower than are the Hardy points. The maximum difference is about 10 per cent. From 400 to 490 millimicrons, the reflection meter values are greater than the analyzer values by 10 per cent. From 490 to 580 millimicrons, the values are less by 10 per cent. From 580 to 700, the values again become greater than the analyzer values.

Cellophanes

The two samples of green cellophane afford examples of color measurement of transparent films. This measurement is carried out with the cellophane placed immediately before a sample of white paper. Any standard white may replace the paper. Here, the light traverses the cellophane once at an average angle of 45 degrees to the surface, and out at 90 degrees with the surface.

The agreement for the case of the dark green cellophane is within 10 per cent over the whole spectral range. For the lighter green sample, the agreement is again good to 10 per cent over the whole range, except for filter 1. Here the discrepancy is 30 per cent. This point of difference may be ascribed to the rapid increase of reflectance of the sample between 450 and 500 millimicrons, in addition to the fact that this filter has an appreciable reflectance up to 500 millimicrons.

Sensitivity of Measurement

The discussion thus far has assumed the results of the Hardy color analyzer to be the correct ones. As pointed out above, it was to be expected that close correlation should exist. The quantitative agreement to be expected will be left to the latter part of this report.

The conclusion to be drawn from the foregoing discussion and data is that one can expect general agreement between the reflection meter color data and the analyzer to within 10 per cent, but only when one of the auxiliary filters is used. Accepting this fact, we now consider the sensitivity, accuracy, and reproducibility of data obtained on the reflection meter.

The sensitivity of the instrument for the measurement of reflectance is determined by the smallest change in reflected light energy which can be noted by a change in the plate current of the amplifier. This sensitivity was determined for the cases of the instrument used with and without an auxiliary $CuSO_4$ filter.

As the instrument is used, a certain light energy is required to produce a given change in plate current. The sensitivity varies with the different filters. The factors which produce this variation are three: first, the intensity of the $CuSO_4$ filtered light at the wave lengths passed by the given filter; second, the photocell sensitivity over this range; third, total percentage of light transmitted by this filter.

The data taken on the three samples of Carrara White, Carrara Green, and blue cover paper are given in Table III. The data represent the percentage change in incident light intensity necessary to produce a 10 microampere change in plate current.

From the results in Table III, it is seen that the sensitivity is directly proportional to the reflectance of the sample. That is to say, if the sensitivity for a given filter is such that a 1 per cent change of light intensity can be determined for a sample with a reflectance of 100 per cent, then a reflectance of 10 per cent may be in error by 1 in 10 per cent or 10 per cent in terms of the actual reflectance.

TABLE III.—SENSITIVITY IN PROPORTION TO REFLECTANCE

	Carrara White		Carrara Green			Blue Cover		
Filter No.	Per Cent*	Reflectance	Per Cent*	Reflectance	Corrected	Per Cent*	Reflectance	Corrected
1	0.8	77	2.1	35	0.95	2.4	30	0.93
2	2.7	77	3.6	50	2.3	8.0	20	2.1
3	4.2	77	9.3	35	4.2	11.5	30	4.5
4	1.0	77	2.0	40	1.1	3.0	25	1.0
5	0.8	77	1.5	50	1.0	6.3	10	0.8
6	2.3	77	4.2	47	2.5	26.0	5	1.7
7	3.0	77	6.7	35	3.0	36.0	5	2.3
8	14.3	77	37.5	30	14.5			

* The per cent which one must move the reflection scale dial to bring about a change of 10 microamperes on the micrometer scale.

The general conclusion to be drawn from these data is that the accuracy of the measurements for filters 2, 3, 6, 7, and 8 will be relatively low for measurements of

reflectances lower than 20 per cent. This limit is, of course, determined by the accuracy with which one is able to set the microammeter needle. It then appears that, for the case of the $CuSO_4$ filter on the dust shield, the reflectances may be in error by as much as 2 per cent in 100 per cent for the low reflectances. All in all, it may be seen from the sensitivity considerations that reproducibility well within 0.3 per cent can be expected for an ideally uniform sample to be measured on a given instrument.

As specific examples of the accuracy of readings taken over the reflectance range from 100 to 5 per cent, data for three independent readings on each filter on one instrument are given in Table IV.

TABLE IV.—SENSITIVITY EXPRESSED IN MICROAMPERES CHANGE OF PLATE CURRENT PER 1 PER CENT CHANGE IN INCIDENT LIGHT INTENSITY

Instrument without Auxiliary Filter

Filter	3	4	5	6	7	8
Reflectance						
100	3.0	22.0	17.5	20.0	15.0	5.5
80	2.4	17.6		16.0	12.0	4.4
60	1.8	13.2		12.0	9.0	3.3
40	1.2	8.8	7.0	8.0	6.0	2.2
20	0.6	4.4	3.5	4.0	3.0	1.1
10	0.3	2.2	1.75	2.0	1.5	0.6
5	0.15	1.1	0.95	1.0	0.75	0.3

Instrument with Auxiliary Filter ($CuSO_4$ on dust shield)

Filter	1	2	3	4	5	6	7	8
Reflectance								
100	11.0	3.7	2.4	10.0	11.0	4.1	3.3	0.7
80	8.8	3.0	1.9	8.0	8.8	3.3	2.6	0.6
60	6.6	2.2	1.4	6.0	6.6	2.4	1.9	0.4
40	4.4	1.5	0.9	4.0	4.4	1.6	1.3	0.3
20	2.2	0.75	0.5	2.0	2.2	0.8	0.6	0.14
10	1.1	0.37	0.24	1.0	1.1	0.4	0.3	0.07
5	0.5	0.18	0.12	0.5	0.6	0.2	0.15	0.03

It is thus seen that, for three independent readings, a maximum mean deviation, good over the complete range, and including all filters except 3 and 8, is 0.3 on a 100 per cent basis. Since these samples were quite uniform, the expected per cent mean deviation for the usual work might be set at 0.5 per cent.

The agreement is to be taken as representative of the consistency of data to be expected on any of the reflection meters now in use. However, this limit is not to be used in the comparison of average data for the same samples as obtained on different instruments. It is seen then that, in general, if the percentage mean deviation for three readings is greater than 0.5 per cent, this deviation can be taken as a measure of the non-uniformity of the samples.

One of the largest factors influencing the magnitude of fluctuations between readings is the area of the sample illuminated. This area is admittedly small. Hence, for samples which are not very uniform, it is necessary to take five readings to use in striking an average.

Reproducibility of Results

Results are reproducible on a given instrument to within 0.5 per cent over the complete range. The factors which affect the reproducibility from instrument to instrument and over a period of time will now be discussed.

The first question which arises is that of standards. As a standard white we use commercial $MgCO_3$, which shows a variation of the order of one per cent. A standard should be permanent as to its reflectance over long periods of time. Ideally, these standards should be of highly colored materials, which are fast to light. At present, the supposedly constant Carrara glasses are taken as secondary standards. These standards should possess a color curve which shows wide variations over the complete spectral range. The use of this type of standard in conjunction with the standard whites should serve as a good check on calibration from time to time.

The factors which influence reproducibility on a given instrument over a period of time include the following points:

1. Focus of filament image.
2. Aging of lamp.
3. Variation of voltage supplying current to the lamps.
4. Change in transmission characteristics of filters:
   a. Wratten filters.
   b. Heat filters.
5. Variation of photocell spectral sensitivity.

These points will now be considered in detail.

Focus of filament image

The readings are quite sensitive to the adjustment of the focus of the light source. Differences of as much as three per cent may be obtained by variations of the focus adjustment. This variation of reflectance with focus adjustment is the one point that is usually chosen for argument against the instrument. It is admitted that, to obtain results to within 0.3 per cent, a good deal of patient adjustment is required.

When one considers the care required to bring two instruments to read alike to within 0.3 per cent for filter 1, it is not surprising that two instruments will disagree by one per cent on the other filters for a large range of reflectance. In order to find what discrepancy might be expected between results on the same instrument for different focus adjustments, color readings were taken for a blue cover and yellow coated paper. The instrument was adjusted so that filter 1 readings were one per cent high on the usual white papers.

Color readings taken on the two samples disagreed for these two focus adjustments by an average of 0.5 per cent over the complete spectrum and range of reflectances from 80 to 6 per cent. The focus was then changed so that the readings on the white papers were 5 per cent high. The average error in this case for the colored samples was 2 per cent high. These data are presented in Table V.

TABLE V.—CHANGE IN REFLECTANCE VALUES OF COLORED SAMPLES FOR GIVEN CHANGES IN THE REFLECTANCE OF WHITE PAPERS ON FILTER NO. 1

Filters	1	2	3	4	5	6	7	8
Blue Cover Paper								
With Jena filter	29.2	20.7	29.7	23.3	11.4	6.5	5.4	5.7
With instrument 1% high on whites	29.7	20.9	30.1	23.6	11.8	6.8	5.9	5.4
With instrument 5% high on whites	32.1	22.6	32.6	26.2	13.2	8.1	6.7	7.9
Yellow Coated Paper								
With Jena filter, instrument checking	10.4	8.9	9.8	15.6	50.5	80.0	85.1	80.4
With whites 1% high	11.1	9.4	9.5	16.3	51.3	80.2	84.5	81.4
With whites 5% high	13.1	12.3	12.2	18.1	52.6	81.0	85.6	76.5

WHITE PAPERS

With Reflection Meter in Checking Focus		Meter in Slightly Changed Focus		Meter Focus Even More Changed	
Without Jena Filter	With Jena Filter	Without Jena Filter	With Jena Filter	Without Jena Filter	With Jena Filter
82.7	83.2	83.6	84.0	86.7	86.6
80.7	81.3	81.6	82.0	85.5	85.9
78.3	78.8	79.1	79.5	83.0	83.4
76.2	76.4	76.9	77.3	80.5	80.4
72.1	72.7	72.5	73.1	76.4	76.4

These data indicate that checking results on all filters may be expected when the focus is so adjusted that the usual calibrating tabs of white papers check on the "brightness filter."

Aging of the Bulb

The effect of bulb aging shows up in the change in the effective "color temperature" of the source; that is, the relative percentages of the light within a given wave length range changes with the life of the bulb. This change can be attributed to two factors. First, the evaporated tungsten on the envelope acts as a filter. Second, the tungsten lost by evaporation decreases the effective diameter of the filament, thereby increasing its resistance

and consequently lowering the "color temperature." This lowering of the temperature would have the effect of making the lamp redder.

In order to see whether or not this effect would measurably affect the reflectance readings over a period of time, readings were taken on a series of colored papers using an instrument in which the light source was left burning continuously until it burned out. Readings were taken at 24 hour intervals until a period of 96 hours had elapsed. Reference to the data of Table VI shows that the agreement is remarkably close, the average variation for all the readings taken being approximately one per cent. Some of the variation encountered may be attributed to surface irregularities over the paper.

TABLE VI.—REPRODUCIBILITY ON PAPER SAMPLES OVER A 100 HOUR PERIOD OF CONTINUOUS BULB OPERATION

Filter	1	2	3	4	5	6	7	8
Yellow Cover Paper	14.1	13.0		23.3	56.4	71.6	78.8	82.7
24 hours	14.1	12.8	13.0	23.4	56.3	71.8	78.3	82.2
48 hours	14.7		13.3	23.5	56.5	71.3	78.7	82.9
72 hours	14.8	12.3	13.6	23.6	55.9	70.7	78.8	81.4
96 hours	14.7	13.0	14.0	23.7	55.7	71.0	78.3	86.7
Orange Cover Paper	18.8	18.8	18.1	23.7	40.1	70.8	79.3	80.8
24 hours	19.4	21.4	18.0	24.1	40.6	71.2	79.4	81.6
48 hours	19.4	19.8	18.3	24.2	40.5	71.2	78.8	82.0
72 hours	19.3	17.2	18.3	23.4	40.7	71.3	78.4	82.8
96 hours	20.3	17.7	16.1	24.4	41.2	70.6	78.9	80.1
Brown Cover Paper	13.2	13.8	13.7	12.3	15.8	32.8	37.1	61.2
24 hours	13.3	13.4	13.3	11.2	16.0	29.4	33.3	58.4
48 hours	13.4	14.1	13.4	12.0	15.8	33.2	35.8	60.7
72 hours	14.8	13.2	14.0	11.8	16.1	33.2	37.1	61.0
96 hours	13.6	13.8	14.2	11.7	16.0	33.4	37.0	62.5
Red Cover Paper	12.4	12.0	11.9	9.4	9.3	13.4	33.9	59.4
24 hours	10.3	12.0	11.6	9.5	9.3	13.2	34.0	59.8
48 hours	11.2	11.7	11.5	9.7	9.0	14.0	32.5	56.2
72 hours	11.5	12.0	11.8	9.3	9.2	13.2	34.1	60.4
96 hours	11.4	12.2	12.0	9.7	9.4	13.3	33.8	60.4
Blue Cover Paper	37.5	23.3	38.1	30.4	17.9	16.1	16.7	43.3
24 hours	37.3	21.4	38.0	29.8	17.5	16.0	17.0	42.7
48 hours	37.5	22.6	38.3	29.8	18.0	16.3	17.0	43.2
72 hours	37.6	23.2	38.8	30.5	17.6	15.9	17.0	44.6
96 hours	37.5	23.1	38.6	30.1	18.0	16.2	16.8	45.1

Light Source and Amplifier Filament Voltage

The voltage of the light source and amplifier filament should remain fairly constant. The proper treatment of the lead storage batteries will assure a current supply whose fluctuations are not large enough to interfere materially with the accuracy of the results obtained. It is important that there are no large fluctuations in the "A" battery voltage: (1) because of the possibility of causing an appreciable change in the color temperature of the source; (2) because changes in amplifier filament voltage will cause fluctuations of the meter needle.

"B" Battery Voltage

Three 45 volt, heavy duty "B" batteries are used and should not drop below 130 volts. Batteries which drop below this limit cannot be depended upon to deliver constant voltage; this also gives rise to meter fluctuations.

Changes in the Filter Transmission Characteristic.

These changes may occur over a period of time and will affect the reproducibility of the results on a given instrument. The effects cannot very well be predicted. However, we may say that the changes will, in general, be slow, and that the errors introduced will be small as compared to the other factors affecting reproducibility.

The Wratten gelatin film filters cemented between plane glass plates are used in the reflection meter. As stated in the Wratten filter pamphlet, these filters are permanent over a period of six months, when exposed to direct sunlight. The life of the filters as used in the reflection meter is much longer, due to the relatively small intensity of light to which they are exposed. Filters which have been in continuous use at The Institute of Paper Chemistry for over 1.5 years show no change in color characteristics. The life of the filters is dependent upon the care accorded them; careful cleaning and lack of exposure to undue heating will be rewarded by longer life.

The transmission characteristics of the $CuSO_4$ and Jena heat filters are quite constant over a period of time. The changes which are likely to occur in these characteristics will affect the results to even a less degree than will be changes in the Wratten filters.

In contrast to the results on permanence of characteristics of the filters, we must consider the variations in characteristics of the filters furnished by the Eastman Kodak Company. Ideally, the filters used in the reflection meter should be chosen by comparing the measured transmission characteristic with the standard filter. This has not been done, so we may attribute a good deal of variation of readings from instrument to instrument to this cause. This is probable, since the variations from filter to filter are likely to be much greater than the change to be expected in a given filter over a period of time.

Variation of Photocell Spectral Sensitivity

The cells selected for use in the reflection meter were chosen for uniformity of spectral sensitivity over the complete visible range. The tolerance in the choice of cells has been small enough to expect reproducible measurements from instrument to instrument for all eight filters used in taking color measurements. As a demonstration of this fact, color readings were taken on one instrument using three different photocells. The results for the green and orange samples chosen are quite representative, since a wide variation in reflectance and rapidity of slope change of the reflectance curve is included in these two samples.

From the data in Table VII, the average deviation is 0.5 per cent, except for filters 3 and 8, for which the deviation is 1.0 per cent. A limit of 0.5 per cent can be

TABLE VII.—REPRODUCIBILITY WITH ALL FACTORS PRESENT SIMULTANEOUSLY WHICH AFFECT IT AND WITH READINGS TAKEN OVER A SIX-WEEKS PERIOD

A. Reflectance. B. Deviation from the mean reflectance.

Filter: 1		2		3		4		5		6		7		8	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
							GREEN CARRARA GLASS								
34.4	.13	58.0	2.2	38.0	.7	35.6	.6	50.0	1.2	47.0	1.0	37.2	.9	30.7	1.5
32.2	2.07	54.0	1.8	38.0	.7	34.0	2.2	48.2	3.0	45.8	2.2	36.5	1.6	28.0	4.2
33.6	.67	54.2	1.6	37.6	.3	36.5	.3	52.1	.9	49.4	1.4	39.3	1.2	34.4	2.2
35.1	.83	57.1	1.3	37.6	.3	37.2	1.0	51.5	.3	48.3	.3	39.5	1.4	36.0	3.8
34.0	.27	56.7	.9	36.0	1.3	36.0	.2	51.0	.2	48.0	0.0	38.0	.1	31.0	1.2
33.2	1.07	54.0	1.8	37.0	.3	36.0	.2	51.3	.1	47.6	.4	37.0	1.1	34.1	1.9
37.7	3.43	57.4	1.6	35.6	1.7	39.5	3.3	53.3	2.1	50.2	2.2	40.4	2.3	34.0	1.8
34.0	.27	55.0	.8	38.5	1.2	34.0	2.2	52.0	.8	48.0	0.0	37.0	1.1	29.0	3.2
							AVERAGES								
34.27	1.13	55.8	1.5	37.3	.8	36.2	1.1	51.2	1.1	48.0	.8	38.1	1.2	32.2	2.5
							GREEN COATED PAPER								
38.0	.4	39.5	2.9	35.5	.7	55.0	.3	65.0	0.0	43.2	1.4	30 5	1.6	26.0	3.0
38.6	.2	39.0	2.4	36.6	.4	55.8	.5	65.0	0.0	45.0	.4	33.0	.8	29.5	.5
38.0	.4	37.0	.4	34.3	1.9	55.6	.3	65.6	.6	45.0	.4	32.6	.5	29.0	0.0
37.5	.9	36.3	.3	33.7	2.5	55.0	.3	65.0	0.0	43.3	1.3	31.4	.7	32.0	3.0
41.0	2.6	31.0	5.6	39.0	2.8	57.0	1.7	65.0	0.0	47.9	2.4	34.0	1.8	28.5	.5
38.6	.2	39.0	2.4	36.6	.4	55.8	.5								
38.0	.4	34.5	2.1	38.0	1.8	53.0	2.3	64.6	.4	44.3	.3	31.5	.6		
							AVERAGES								
38.4	.7	36.6	2.3	36.2	1.5	55.3	.8	65.0	.1	44 6	.9	32.16	.8	29.0	1.4

TABLE VIII.—REPRODUCIBILITY WITH ALL FACTORS SIMULTANEOUSLY PRESENT WHICH AFFECT IT HELD CONSTANT WITH THE EXCEPTION OF PHOTOCELLS
A. Reflectance. B. Deviation from the mean reflectance.

Filter	1		2		3		4		5		6		7		8	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
GREEN CARRARA GLASS																
Photocell No. 192....	34.6	.3	60.0	.2	39.0	.1	36.4	.3	51.0	.1	47.4	.8	38.0	.9	32.0	.2
Photocell No. 152....	34.6	.3	59.0	.8	37.4	1.6	35.5	.6	51.0	.1	46.0	.6	36.5	.6	34.0	1.8
Photocell No. 125....	35.4	.5	60.4	.6	41.0	2.0	36.5	.4	50.6	.3	46.5	.1	36.8	.3	31.0	1.2
Average	34.9	.4	59.8	.5	39.13	1.2	36.13	.4	50.9	.2	46.63	.5	37.1	.6	32.23	1.4
ORANGE COATED PAPER																
Photocell No. 192....	6.5	.1	7.0	0.0	5.5	.5	7.0	.3	13.4	.4	51.0	0.0	77.0	1.0	77.0	0.0
Photocell No. 152....	6.5	.1	7.0	0.0	6.5	.5	6.5	.2	13.0	0.0	51.0	0.0	75.0	1.0	75.0	2.0
Photocell No. 125....	6.2	.2	7.0	0.0	6.0	.0	6.5	.2	12.5	.5	51.0	0.0	76.0	0.0	78.0	1.0
Average	6.4	.1	7.0	0.0	6.0	.3	6.7	.2	13.0	.3	51.0	0.0	76.0	.6	77.0	1.0

attributed to variations in photocells, since deviations of 0.2 per cent are to be attributed to variations in the sample.

The data in Tables VII and VIII show the type of results to be expected when the effect of all the factors affecting reproducibility are present simultaneously. The deviations to be observed in the Tables may be taken as a measure of the outside limits of reproducibility to be encountered in measuring the reflectances of colored samples.

The length of life of the photocells is somewhat dependent upon the conditions under which the cells are used. For ordinary use a cell can be expected to retain suitable color characteristics for approximately a two-year period.

Range of the Instrument

As is evident from the color curves of Figures 1 to 25, the range of colors which it is possible to measure is very broad. For the neutral grays, the range extends from the $MgCO_3$ white down to the best black surfaces. Admittedly, the accuracy of the determination of the blacks is much less than for the whites.

For the chromatic colors, the range for papers includes those colors from the highly saturated blues to the reds. In addition, we have the highly saturated colors transmitted by various filters. Of course, the tints are included in the range with higher accuracy.

As mentioned in the introduction, there are many types of surface adaptable to color study on this instrument. We have included the surfaces represented by bonds, coated, newsprint, and cover papers, and polished glasses.

In general we can expect the color curves for an opaque, smooth-surfaced material to correlate with the curves for that surface on the spectrophotometer. It is for this type of surface that the effect of body color of the substance is predominant.

Comparison color curves may be run equally well on surfaces which are not really smooth-surfaced. Here we must not expect as good correlation as in the case of the smooth-surfaced materials. The reason for this is that the very rough surfaces present many tiny reflecting facets which prevent light penetrating any appreciable volume of the material. The general effect of such surfaces on the measured color curves will be to increase reflectances throughout the spectrum. This increase will not be as sensitive a function of wave-length as is the body color. Hence, the reflectances will indicate less saturated colors for these rough surfaces, similar to those observed visually. As an example of the effect of different surfaces, the Carrara green glass was surfaced with emery powders of different mesh ranging from 1000 to 80. It can be seen from the data in Table IX that the effect of grinding is to increase the reflectances by a constant amount over the complete range.

TABLE IX.—THE EFFECT OF SURFACE SMOOTHNESS ON REFLECTANCE

The data show the reflectance of a green Carrara glass for varying meshes of emery used in grinding the surface.

Filter No.	Polished Glass		Glasses Polished with Emery Powders			
	Without Jena Filter	With Jena Filter	No. 1000	No. 600	No. 220	No. 80
1	42.2	33.4	38.0	38.3	37.2	39.7
2	56.8	55.5	59.4	60.0	56.4	60.4
3	48.5	33.7	38.9	39.1	37.3	40.5
4	39.3	35.5	39.7	40.0	38.8	41.1
5	55 5	50.2	53.7	54.8	52.1	54.0
6	57.8	46.9	49.7	50.4	49.4	51.2
7	49 2	37.3	41.1	41.6	40.4	42.2
8	72 5	35 9	36.3	38.2	37.9	38.5

Applicability

The General Electric reflection meter is used in the paper industry at present for measuring the "brightness" of white papers. The "brightness" for this case is defined as the per cent reflectance of the sheet in terms of $MgCO_3$ for the light transmitted by the Wratten 49 filter. With the addition of the auxiliary Jena BG 18 filter, the instrument's field of applicability becomes enlarged and it can be employed for the accurate measurement of the color of colored opaque materials.

The application of immediate interest to the paper industry include:

1. Color matching and color control of pulps, and white and dyed papers.
2. Standardization of colors used in visual matching.
3. Colors of clays and fillers.

Summary

The lack of correlation between the color readings obtained on the reflection meter (as now furnished to the paper industry) and the Hardy color analyzer is discussed. The method for decreasing the discrepancies so that the two sets of data agree within an average limit of 10 per cent is described. The accuracy, sensitivity, range, and applicability are given, and the reproducibility on one instrument over a period of time, and from instrument to instrument, is set forth, together with the various factors affecting the reproducibility. Data are given showing the type of agreement to be expected on a wide range of samples selected as representative of the variation of colors and surfaces to be encountered in the paper industry.

Standardizing Pulpwood

Polish efforts to standardize pulpwood on an international scale, though persistent throughout 1936, have not as yet been successful, according to a recent report from American Commercial Attache George R. Canty, at Warsaw. Objections raised by Finland and Austria as to fir content, which Poland fixed at 20 per cent on the basis of domestic requirements and those of the German market, have not been overcome.

Delaware Valley TAPPI to Meet

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry will meet at the Engineers Club, Philadelphia, Pa., Friday, May 21, 1937. The subjects under discussion will be "Absorbency and Impregnation."

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Sulphite Process

Manufacture of Fodder Yeast from Sulphite Waste Liquor. Herman Fink and Richard Lechner. Angew. Chem. 49, no. 43-775-777 (Oct. 24, 1936).—The article describes successful experiments on a laboratory scale for cultivating fodder yeast with sulphite waste liquor and ammonia as sole nitrogen source; no organic nitrogen was added. Experiments with waste waters from groundwood mills gave too small yields of carbohydrates (only 150 grs. of reducing sugar/cubic meter) to warrant further studies. Condensates from steamed groundwood are being investigated.—C.J.W.

Tanning Extracts from Residues of the Sulphite Alcohol Industry. S. S. Voyutzkii and L. Ya. Levanidova. Lesokhim. Prom. 5, no. 1:15-19 (1936); C. A. 30:8678.—Calcium oxide is removed from the residue evaporated to 10-14 deg. Be by sulphuric acid, but high acidity of the extract thus prepared prevents its use for tanning; for this the extract prepared by the ammonium sulphate method is best. The effect of tanning with this extract is almost equivalent to that of the tanning extract "Ampitch."—C.J.W.

Ammoniation of Sulphite Waste Liquor and its Possible Utilization as a Fertilizer Material. M. Phillips, M. J. Goss, B. E. Brown and F. R. Reid. J. Agr. Research 53:209-224 (1936).—The product obtained in ammoniating the neutralized dry residue of sulphite waste liquor at 220°C. with aqueous ammonia under pressure contained 10.55 per cent nitrogen. A product of similar nitrogen content was also obtained by passing free ammonia into the sulphite waste liquor until the concentration of the free ammonia was 14.5 per cent, heating the resulting solution under the same conditions as before, and evaporating the solution to dryness. The nitrogen in the ammoniated products decreased with decrease in the temperature of ammoniation. The ammonia nitrogen in the products obtained on ammoniating at 180°C. ranged from 0.55 to 1.92 per cent, but little or no ammonia nitrogen was present in the products formed on ammoniating at 200°C. or over. The percentage of insoluble nitrogen soluble in neutral permanganate was not greatly affected by the temperature of ammoniation. The ammoniated products were nontoxic to the nitro-organisms of the soil although their ammonifications and nitrification were rather slow as compared with that of casein and cottonseed meal and ammonium sulphate and dried blood, respectively. Greenhouse tests showed that, as a source of nitrogen, the ammoniated material caused increased yields of millet, but it was not as efficient in this respect as either dried blood or a mixture of sodium nitrate and ammonium sulphate.—A.P.-C.

Process of Making Vanillin from Sulphite Waste Liquor. Lloyd T. Sandborn, Jörgen R. Salvesen and Guy C. Howard, assignors to Marathon Paper Mills Co. U. S. pat. 2,057,117 (Oct. 13, 1936).—A suitably concentrated lignin material (preferably calcium ligninsulphonate obtained from sulphite waste liquor) is cooked under pressure with an aqueous solution of caustic alkali. The cook is discharged into a hot solution of an alkali metal bisulphite having a pH value below 7.0, the precipitate is removed by filtration, the solution is treated with a slightly excess of acid to decompose inorganic monosulphite and bisulphite, and is heated to drive off sulphur dioxide which is recovered. The vanillin is removed from the solution by extraction with benzene.—A.P.-C.

Method for the Carbonization of Pulp Waste Liquors. Ernst Strupp. U. S. pat. 2,056,746 (Oct. 6, 1936).—The gases produced in the carbonization of all kinds of pulp waste liquors contain hydrogen and have some heating capacity, and they are repeatedly used as heat carriers in the distillation process. Provision is made for their mixture, outside the distillation apparatus, with such an amount of air that the hydrogen cannot be burned entirely but that sufficient hydrogen remains to render the gas mixture non-oxidizing. Waste gases of any other heating plants, *e.g.*, gas or oil burners, are added to the mixture in such quantities that the gas mixture introduced into the distillation apparatus contains enough heat to effect dry distillation of the waste liquor.—A.P.-C.

Cellulose Factories and Fish. S. Vallin. Mitt. Anst. Binnenfisch. Drottingholm, Stockholm, 1935, No. 5. 41 p. Water Pollution Research, Summary of Current Literature 9:322.—Laboratory and open-air experiments were made on the effect of waste waters from Swedish sulphite and sulphate cellulose factories on perch, salmon, carp, roach and other fish. The waste waters were diluted with filtered lake water. Sulphite cellulose waste waters have a very low alkalinity and lime content, and their acidity makes them often directly dangerous to fish. The oxygen demand of water containing acid and alcohol lyes but free from fibers was high; fibrous matter without lye only affected the oxygen demand of streams when considerable deposits had formed. Fungus grew in water containing sulphite lye and also on fibers. Sulphate lyes are much more toxic to fish than sulphite lyes and may cause death even when diluted 2,000 times. The toxicity of the resinic acids can be removed by treatment with sulphuric acid. The effects of poison and of lack of oxygen on the different fish followed parallel lines. Contrary to previous experience, Paphnia was found to show great resistance to poisoning by resinic acids.—C.J.W.

New England TAPPI to Meet

The New England Section of the Technical Association of the Pulp and Paper Industry will meet at the Hotel Holyoke, Holyoke, Mass., May 21, 1937. F. T. Carson of the Paper Section of the National Bureau of Standards, Washington, D. C., will talk on "Printing Papers."

Obituary

Josh Langston

ROANOKE RAPIDS, N. C., April 26, 1937 — Josh Langston, aged 66, one of the few real pioneers of Roanoke Rapids left, died in his home here recently.

Mr. Langston came here in 1905 when he and Tom Barrett put in a ground wood pulp mill and made pulp for shipment to South Carolina mills. The next year he went with the new Halifax Paper Company and helped build their first mill which started operations in September, 1907. He has been with them ever since.

For years he was head of the pulp department, then night superintendent. Later he was steam engineer and recently he was in charge of the supply room.

He was born in South Carolina but spent most of his youth in Florida, his family moving back to Hartsville, S. C., when he was fifteen. From there he came to Roanoke Rapids.

He was a member of the Baptist Church, the Woodmen of the World, the Red Men and the Junior Order. He was always interested in civic matters in Roanoke Rapids, a good lodge brother, and because of his happy personality was a friends of old and young alike.

Surviving are his widow, Mrs. Ida Langston, one daughter, Mrs. J. M. Vincent; three sons, Claude, Lewis and Leonard; five grandsons: Lewis Langston, Jr., Richard, Russell, Robert and David Liles and one great grand-daughter, Pearl Liles.

F. T. Buss

F. T. Buss, manager of Solvay Sales Corporation, St. Louis office, died Sunday, April 18, at the Barnes Hospital, following a major operation which was performed last month. He is survived by his wife and two daughters, Mary and Frances.

Mr. Buss was born in St. Louis, May 7, 1889, and was graduated from Washington University, St. Louis, in 1910 with Bachelor of Arts Degree in chemistry. He also studied medicine at the same college for one year, but did not complete the course.

From 1911 to 1916, Mr. Buss resided in Rochester, N. Y., being first employed as a research chemist at Eastman Kodak Company and subsequently as manager of the Rochester Photo Works. He returned to St. Louis in 1916 to joint the sales force of Whitelaw Brothers Chemical Company. In 1918 he received leave of absence to join the Chemical Warfare Service in Washington, D. C. He later returned to Whitelaw Brothers Chemical Company. In 1925 when that company was absorbed by Solvay Sales Corporation, Mr. Buss was appointed manager and retained that position until his death.

Mr. Buss was a member of the University Club of St. Louis, the American Chemical Society, Sigma Nu Fraternity and Trinity Valley Lodge, No. 1048, A. F. & A. M., Dallas, Texas.

Henry N. Doolittle

Henry N. Doolittle, aged 88, died recently at his home, 210 South Main street, Wallingford, Conn., where he had lived since his retirement, in 1918, from the box manufacturing business. He had been ill only a few days from a heart ailment.

Mr. Doolittle was the oldest member of the Newark Chamber of Commerce in point of membership.

Born in Hebron, Conn., January 11, 1849, a son of the Rev. Edgar Jared and Jane Sage Doolittle, who traced their ancestry back to William the Conquerer, Mr. Doolittle was educated at Guilford and passed his entrance examinations to Yale at the age of fifteen. Before matriculating he decided on a business career and entered bis brother's box factory in Meriden, Conn.

Mr. Doolittle came to Newark in 1870 to start a box manufacturing business. He was first located at 271 Market street but soon moved to larger quarters in New Jersey Railroad avenue and after that occupied a large structure at 31 Bruen street. In later years he opened branches in New York and in Danbury, Conn.

In 1874, six years after it was organized, Mr. Doolittle joined the Board of Trade, which later became the Chamber of Commerce.

In 1876 Mr. Doolittle married Miss Josephine Lapham, of Newark, who died several years ago.

Mr. Doolittle leaves a daughter, Miss Ethel G. Doolittle; a sister, Miss Jane Doolittle; a brother, Orrin, and two grandchildren.

Funeral services were held in Wallingford.

James A. Donoghue

NEW YORK, May 3, 1937—James A. Donoghue, vice-president of Coy-Disbrow & Co., Inc., 686 Greenwich street, general paper merchants, died recently at Flushing, Queens. He was sixty-eight years old and a native of England. He had been vice-president of Coy-Disbrow since 1923. Surviving are his wife and four sons, Thomas, Carroll, Robert F. and Paul J. Donoghue.

W. J. Hempel

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 3, 1937—W. J. Hempel, vice president of the Canadian Paper Box Manufacturers' Association, passed away on April 27 at his home in Brantford, Ont., after a long illness. He was sixty years of age, and was manager of the Hempel Paper Box Company, which he organized in 1906. Mr. Hempel was a former member of the Brantford City Council and for a number of years was chairman of the Seperate School Board. He is survived by his widow, three sons and four daughters.

James J. McCall

LOS ANGELES, Cal., April 26, 1937—James J. McCall, 81 year old pioneer paper manufacturer, of 1101 West 75th street, Los Angeles, died here recently.

Thirty-five years ago Mr. McCall came to Los Angeles from Middletown, Ohio. He had been a paper manufacturer in the Middle West, and brought his business to the Southland. In 1932 he retired.

He leaves his wife, Mrs. Cecily McCall; three sons, William S., John H. and James A. McCall, and two daughters, Mrs. Michael McDermott and Mrs. Edward Clegg, all of Los Angeles.

New Pyrometer Catalog

C. J. Tagliabue Manufacturing Company, of Brooklyn, N. Y., has just published a new pyrometer catalog, 1101C. This book contains a number of new developments, including new High Speed Photoelectrically Balanced Multipoint Recorder, listed for the first time in this book.

Boston Demand Excellent

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 3, 1937—Paper business in the Boston area continued generally good last week, both in fine and wrapping grades. A fine paper mill, represented in Boston, is sold out until June 15. The demand for diploma lines was well sustained. While in some quarters of the market, there was "no complaint at all" in regard to the volume of kraft sold, in others it was intimated that there was less activity in sales to retail stores on account of rainy weather and consequently less shopping with not so much need for wrapping paper. The call for box board was fairly good. The demand for material for shoe boxes eased off, but mills as a whole were still busy.

In many grades of paper stock, the demand was slightly lower. In old papers, corrugated boxes, which had been quoted at .95 @ $1.00, declined to .85 @ .95, f. o. f., Boston. It was expected that mixed papers would take a tumble, but the decline did not develop. With prices advancing some weeks ago, collectors accumulated a considerable amount of material, a fact which tends to lower the price. Bagging was somewhat easier.

New domestic rags held their own rather well, with prices unchanged. In old domestic rags, further declines are expected in roofing stock. There was not much dealer business in foreign rags, although one is expecting a 100-ton lot of dark cottons for a mill. Three Japanese boats are in this port, with cargoes of dark cottons, evidently ordered by importers, to go direct to roofing paper manufacturers. Dark cottons were quoted at 2.00 @ 2.10, against a former range of 2.10 @ 2.20, f. o. b, Boston.

Indiana Paper Demand Better

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 26, 1937—Continued improvement in the local paper indutry has created a somewhat new problem for the local trade. The new problem is deliveries and it has been a long time since jobbers and box manufacturers here have had any difficulty getting all the stock they could be persuaded to order. Stocks in several lines here are light and mills apparently are slow in making deliveries due to an apparent increase in demand from many other sections of the country. Along with this condition comes the almost definite promise that prices in several lines are apt to be increased and jobbers are expecting increases from the mills almost momentarily. Those who have signed contracts to last until midsummer are fortunate, but very few possess such contracts.

Newsprint demand continues to improve. Advertising lineage particularly in the rural communities and the smaller industrial towns has increased steadily since the first of the year and there appears to be a bright year ahead of these publications. The larger papers, which have a steady volume of foreign advertising have been in good shape since last fall.

For the first time since last year, orders are beginning to be received for summer specialties. The last week saw the first really warm weather this section has had and dealers began buying. The volume is not large yet, mostly for fill-in purposes to balance stocks against the hold-over of last fall, but the volume is satisfactory for the first to come.

Tissues are moving steadily. Coarse papers also have reflected the general tendency. Paper stock men say they are getting some better prices on both rags and papers than has been the rule for some time. Fine grades of both rags and paper seem most in demand.

Salesman's Sport Dinner

Arrangements have been made by the Salesmen's Association of the Paper Industry with the New York Athletic Club for the group to attend the Annual All-Sports Dinner and Show on Wednesday, May 12. The usual luncheon on May 10 will be omitted.

Dinner will be held at 6:30 in private dining rooms 4 and 5. At 9:00 o'clock the group will go to reserved seats on the running track to witness the big show which will include among other things the following:

Five boxing bouts by outstanding amateurs, fencing exhibition, several vaudeville acts and introduction of outstanding athletes.

The total charge for dinner and entertainment is $3.50 per person. Reservations are limited and applications should be sent immediately to Dr. E. O. Merchant, secretary, 122 East 42nd street, New York.

New Paper Saleswoman

CHICAGO, Ill., May 3, 1937—Chicago has a new paper "saleswoman" in the person of Miss Helen Seymour who has recently become identified with the Gilbrater Paper Company as an experienced sales representative. The Gibralter organization is the recently formed unit to merchandise odd lots in this section. Miss Seymour has made a remarkable record as general manager of Kallis & Co., printers. During that time she gave evidence of her knowledge of paper and paper requirements which are expected to stand her in good stead in her new position. Miss Seymour has also contributed to various publications, writing on the subject of paper and its relation to printing. Gibralter offices are at 420 West Harrison street.

Sidney L. Willson Honored

HOLYOKE, Mass., May 4, 1937—Sidney L. Willson, retired president of the American Writing Paper Company, Inc., was given a testimonial dinner at the Hotel Holyoke Thursday evening and presented with a sterling silver pitcher as a souvenir of the occasion.

Leon M. Yoerg, the new president, acted as toastmaster and the 35 present joined in saying complimentary things about Mr. Willson's work as president of the organization.

The presentation was made by Russell S. Madden, vice-president in charge of sales. It was inscribed "To Sidney L. Willson from his friends in appreciation of his loyalty and leadership as president of the American Writing Paper Company, 1922-1937."

Andrew J. Walker Moves

Andrew J. Walker, general paper merchant, announces the removal of his offices and plant from 514 Twelfth street to a new and modernly equipped building at 1457-1459 Church street, N. W., Washington, D. C.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING MAY 1, 1937

SUMMARY

Cigarette paper .....555 cs.
Wall paper .....11 bls., 25 bxs., 26 cs.
Paper hangings .....8 bls., 1 pkg., 1 cs.
Newsprint .....2,290 rolls
Printing paper .....56 cs., 117 rolls
Wrapping paper 263 bls., 4,217 rolls, 115 pkgs., 140 bdls., 6 cs.
Packing paper .....10 bls.
Filter paper .....26 pkgs., 32 cs.
Filter mass .....5 cs.
Drawing paper .....2 cs.
Surface coated paper .....21 crates, 155 cs.
Metal coated paper .....7 cs.
Photo paper .....8 cs.
Decalcomanias .....45 cs.
Decalcomania paper .....23 cs. (duplex)
Transfer paper .....10 cs.
Veneer paper .....10 cs.
Tissue paper .....27 cs.
Gummed paper .....5 cs.
Writing paper .....3 cs.
Cardboard .....34 cs.
Envelopes .....9 cs.
Paper tubes .....214 pkgs.
Miscellaneous paper .....1,478 rolls, 816 bls., 270 cs.

CIGARETTE PAPER

Gluckman & Strauch, *Normandie,* Havre, 1 cs.
DeMauduit Paper Corp., *Normandie,* Havre, 2 cs.
H. H. Strauss, *Normandie,* Havre, 208 cs.
P. J. Schweitzer, *Excalibur,* Marseilles, 3 cs.
——, *Excalibur,* Marseilles, 25 cs.
R. J. Reynolds Tobacco Co., *Washington,* Havre, 143 cs.
DeMauduit Paper Corp., *Washington,* Havre, 173 cs.

WALL PAPER

F. J. Emmerich, *Deutschland,* Hamburg, 1 ble., 1 cs.
F. J. Emmerich, *Carinthia,* Liverpool, 1 cs., 1 ble.
F. J. Emmerich, *Europa,* Bremen, 4 bls.
S. K. Lonegren, *Gripsholm,* Gothenburg, 25 bxs.
——, *Besholt,* Yokohama, 4 cs.
F. Blank, *Washington,* Hamburg, 15 cs.
Globe Shipping Co., *New York,* Hamburg, 5 bls.
——, *New York,* Bremen, 5 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Merchant,* London, 8 bls., 1 cs.
——, *Berengaria,* Southampton, 1 pkg.

NEWSPRINT

Perkins Goodwin & Co., *Deutschland,* Hamburg, 518 rolls.
Jay Madden Corp., *Deutschland,* Bremen, 351 rolls.
Jay Madden Corp., *Pr. Harding,* Hamburg, 350 rolls.
——, *Bergensfjord,* Oslo, 383 rolls.
Perkins Goodwin & Co., *New York,* Hamburg, 300 rolls.
Jay Madden Corp., *New York,* Bremen, 388 rolls.

PRINTING PAPER

Japan Paper Co., *American Merchant,* London, 2 cs.
——, *American Merchant,* London, 43 rolls.
Dingelstedt & Co., *Deutschland,* Hamburg, 54 rolls.
J. H. & G. B. Siebold, Inc., *Pr. Harding,* Hamburg, 36 cs.
Dingelstedt & Co., *New York,* Hamburg, 20 rolls, 18 cs.

WRAPPING PAPER

Guaranty Trust Co., *Gripsholm,* Gothenburg, 32 bls., 1004 rolls.
Lincoln Import Specialties Corp., *Gripsholm,* Gothenburg, 969 rolls.
——, *Gripsholm,* Gothenburg, 291 rolls.
Lunham & Reeve, Inc., *Gripsholm,* Gothenburg, 31 bls., 76 rolls, 140 bdls.
Jay Madden Corp., *Deutschland,* Hamburg, 66 rolls.
J. P. Heffernan Paper Co., *Bronzville,* Genoa, 115 pkgs.
Jay Madden Corp., *Pr. Harding,* Hamburg, 43 bls., 596 rolls.
F. C. Strype, *Black Hawk,* Antwerp, 6 cs.
Guaranty Trust Co., *Tennessee,* Gothenburg, 401 rolls.
Arkell Safety Bag Co., *Washington,* Hamburg, 72 rolls.
Jay Madden Corp., *Washington,* Hamburg, 157 bls., 742 rolls.

PACKING PAPER

——, *Deutschland,* Bremen, 10 bls.

FILTER PAPER

C. Schleicher & Schull Co., Inc., *Deutschland,* Hamburg, 15 cs.
H. Reeve Angel & Co., Inc., *American Merchant,* London, 17 cs.
H. Reeve Angel & Co., Inc., *Aquitania,* Southampton, 26 pkgs.

FILTER MASS

——, *New York,* Hamburg, 5 cs.

DRAWING PAPER

Japan Paper Co., *American Merchant,* London, 2 cs.

SURFACE COATED PAPER

Globe Shipping Co., *Deutschland,* Hamburg, 21 crates.
Gevaert Co. of America, *Westernland,* Antwerp, 155 cs.

METAL COATED PAPER

Dingelstedt & Co., *Deutschland,* Bremen, 2 cs.
Hensel Bruckman & Lorbacher, *Europa,* Bremen, 2 cs.
K. Pauli Co., *New York,* Bremen, 1 cs.
K. Pauli Co., *New York,* Hamburg, 2 cs.

PHOTO PAPER

J. J. Gavin, *Aquitania,* Southampton, 7 cs.
——, *Aquitania,* Southampton, 1 cs.

DECALCOMANIAS

Sellers Transportation Co., *Deutschland,* Hamburg, 9 cs.
Sellers Transportation Co., *Europa,* Bremen, 29 cs.
L. A. Consmiller, *Europa,* Bremen, 6 cs.
Phoenix Shipping Co., *New York,* Bremen, 1 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Carinthia,* Liverpool, 23 cs. (duplex).

TRANSFER PAPER

Phoenix Shipping Co., *Deutschland,* Hamburg, 10 cs.

VENEER PAPER

Mitsui & Co., Ltd., *Tokai Maru,* Yokohama, 10 cs.

TISSUE PAPER

F. C. Strype, *Carinthia,* Liverpool, 4 cs.
J. Romer, *Tokai Maru,* Kobe, 13 cs.
American Express Co., *New York,* Hamburg, 10 cs.

GUMMED PAPER

Heemsoth Kerner Corp., *Deutschland,* Bremen, 5 cs.

WRITING PAPER

Japan Paper Co., *American Merchant,* London, 3 cs.

CARDBOARD

Metropolitan Importing & Manfg. Co., *Pr. Harding,* Hamburg, 29 cs.
——, *Europa,* Bremen, 5 cs.

ENVELOPES

——, *Deutschland,* Hamburg, 9 cs.

PAPER TUBES

——, *Deutschland,* Hamburg, 214 pkgs.

MISCELLANEOUS PAPER

Keuffel & Esser Co., *Deutschland,* Hamburg, 72 cs.
——, *Deutschland,* Hamburg, 126 bls.
Moller Products Corp., *Kamikawa Maru,* Kobe, 24 cs.
The Borregaard Co., Inc., *Gripsholm,* Gothenburg, 596 rolls, 17 bls.
——, *Gripsholm,* Gothenburg, 477 bls., 835 rolls.
F. L. Kramer & Co., *Gripsholm,* Gothenburg, 196 bls.
E. H. Sargent & Co., *Gripsholm,* Gothenburg, 7 cs.
T. H. Hindle & Co., *Beesholt,* Yokohama, 12 cs.
Japan Paper Co., *Besholt,* Kobe, 56 cs.
T. N. Fairbanks, Inc., *Tokai Maru,* Yokohama, 5 cs.
Keuffel & Esser Co., *New York,* Hamburg, 47 rolls, 53 cs.
American Express Co., *New York,* Hamburg, 41 cs.

RAGS, BAGGINGS, ETC.

Manufacturers Trust Co., *Parnahyba,* Rio, 86 bls. rags.
Irving Trust Co., *Siboney,* Vera Cruz, 59 bls. rags.
——, *Deutschland,* Hamburg, 100 bls. rags.
Royal Manfg. Co., *Deutschland,* Hamburg, 50 bls. cotton waste.
Manufacturers Trust Co., *Deutschland,* Hamburg, 330 bls. cotton waste.
——, *Deutschland,* Hamburg, 182 bls. cotton waste.
J. Cohen & Sons Co., *Carinthia,* Liverpool, 14 bls. paper stock.
Chase National Bank, *Carinthia,* Liverpool, 39 bls. bagging.
——, *Carinthia,* Liverpool, 51 bls. rags.
E. J. Keller Co., Inc., *Bronxville,* ——, 130 bls. rags.
J. Schweitzer, *Pr. Harding,* Hamburg, 13 bls. rags.
Royal Manfg. Co., *Kamikawa Maru,* Shanghai, 150 bls. cotton waste.
O. Smith & Sons, *Kamikawa Maru,* Shanghai, 150 bls. picker waste.
Linter Supply Co., *Kamikawa Maru,* Shanghai, 200 bls. cotton waste.
Railway Supply & Manfg. Co., *Kamikawa Maru,* Shanghai, 130 bls. cotton waste.
Railway Supply & Manfg. Co., *Kamikawa Maru,* Kobe, 100 bls. cotton waste.
1st Natl Bank of Boston, *Kamikawa Maru,* Kobe, 1100 bls. cotton waste.
O'Brien Padawer Co., *Kamikawa Maru,* Kobe, 100 bls. cotton waste.
Loumar Textile By Products Co., *Kamikawa Maru,* Kobe, 13 bls. paper stock.
Manufacturers Trust Co., *Awobasan Maru,* Kobe, 100 bls. picker waste.
Great Eastern Packing & Paperstock Corp., *Cold Harbor,* Glasgow, 20 bls. jute cuttings, 73 bls. bagging.
Castle & Overton, Inc., *Cold Harbor,* Dundee, 138 bls. paper stock.
Chase National Bank, *Cold Harbor,* Dundee, 101 bls. paper stock.
——, *Cameronia,* Glasgow, 53 bls. rags.
Chase National Bank, *Westernland,* Antwerp, 293 bls. jute waste.
Irving Trust Co., *Westernland,* Antwerp, 124 bls. jute waste.
Banco Coml Italiane Trust Co., *Westernland,* Antwerp, 22 bls. thread waste.
——, *Westernland,* Antwerp, 96 bls. rags.
E. J. Keller Co., Inc., *Black Hawk,* ——, 126 bls. bagging.
——, *Black Hawk,* Antwerp, 20 bls. rags.
——, *American Merchant,* London, 33 bls. rags.
J. J. Ryan & Sons, Inc., *Besholt,* Kobe, 200 bls. cotton waste.
New England Waste Co., *Besholt,* Kobe, 100 bls. cotton waste.
——, *Besholt,* Shanghai, 150 bls. cotton waste.
——, *Biela,* Santos, 300 bls. linters.
——, *Biela,* Santos, 536 bls. cotton waste.
——, *Exiria,* Piraeus, 107 bls. rags, 61 bls. bagging.
——, *Washington,* Hamburg, 250 bls. rags, 100 bls. cotton waste.
F. Stern, *Washington,* Hamburg, 65 bls. rags.
Darmstadt Scott & Courtney, *Washington,* Hamburg, 82 bls. rags.
Irving Trust Co., *Washington,* Hamburg, 74 bls. rags.
——, *Exchester,* Genoa, 12 bls. rags.
New England Waste Co., *Tokai Maru,* Shanghai, 100 bls. picker waste.
——, *Tokai Maru,* Shanghai, 100 bls. cotton waste.
Castle & Overton, Inc., *Dagrun,* Buenos Ayres, 341 bls. bagging, 79 bls. strings.
W. Steck & Co., *Haukefjell,* Antwerp, 179 bls. flax waste.
Loumar Textile By Products Co., *Haukefjell,* Antwerp, 108 bls. bagging.
Darmstadt Scott & Courtney, *Haukefjell,* Antwerp, 147 bls jute waste.
R. Blank, *Haukefjell,* Antwerp, 116 bls. rags.
——, *Gloucester City,* Bristol, 58 bls. rags.
R. & V. Miller, *Binnendyk,* Rotterdam, 9 bls. rags.

GLUESTOCK, ETC.

——, *Deutschland,* Hamburg, 203 bags bone glue.
——, *Saturnia,* Trieste, 500 bags bone glue.
——, *Saturnia,* Trieste, 110 bags hide glue.

OLD ROPE

——, *Cold Harbor,* Leith, 72 bls., 74 coils.
W. Steck & Co., *Black Hawk,* Rotterdam, 70 coils.
Chase National Bank, *American Merchant,* London, 66 coils.
Banco Coml Italiane Trust Co., *American Merchant,* London, 168 bls.
E. J. Keller Co., Inc., *American Merchant,* ——, 39 coils.
Chase National Bank, *Gloucester City,* Bristol, 40 coils.
W. Steck & Co., *Binendyk,* Rotterdam, 95 coils.
G. W. Millar & Co., Inc., *Binendyk,* Rotterdam, 96 coils.

CASEIN

——, *Deutschland,* Hamburg, 136 bags.
——, *Helgoland,* Buenos Ayres, 34 bags.

WOOD PULP

——, *Deutschland,* Hamburg, 125 bls. wood pulp, 25 tons.
J. Andersen & Co., *Pr. Harding,* Hamburg, 1400 bls. sulphite, 280 tons.
Johaneson Wales & Sparre, Inc., *Gripsholm,* Gothenburg, 30 bls. sulphite.
——, *Black Hawk,* Rotterdam, 429 bls. wood pulp, 85 tons.
A. Giese & Son, *Black Hawk,* Rotterdam, 40 bls. wood pulp, 2 tons.
M. Sone, *Tennessee,* Stockholm, 1200 bls. sulphite.
Price & Pierce, Ltd., *Tennessee,* Stockholm, 1325 bls. unbleached sulphite.
Pulp Specialties, Inc., *Tennessee,* Stockholm, 169 bls. sulphate.
Gottesman & Co., Inc., *Tennessee,* Stockholm, 900 bls. sulphite.
Gottesman & Co., Inc., *Tennessee,* Halmstad, 4200 bls. sulphite.
Perkins Goodwin & Co., *Bergensfjord,* Oslo, 250 bls. sulphite.
J. Andersen & Co., *Bergensfjord,* Oslo, 2454 bls. sulphite.
Bankers Trust Co., *Maria,* Trieste, 477 bls. wood pulp.

WOOD PULP BOARDS

——, *Deutschland,* Hamburg, 61 bls.
Flexideal Dry Mat Co., *Pr. Harding,* Hamburg, 40 bls.
Wilkinson Bros. & Co., Inc., *Gripsholm,* Gothenburg, 20 rolls.
Salwen Paper Co., *Gripsholm,* Gothenburg, 28 bls.
H. Fuchs & Son, *Gripsholm,* Gothenburg, 352 crates.

WOOD PULP SHEETS

——, *New York,* Bremen, 53 bls.

BOSTON IMPORTS

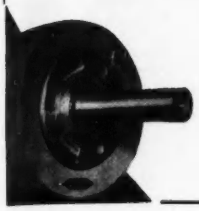
WEEK ENDING MAY 1, 1937

Loumar Textile By Products Co., *Kamikawa Maru,* Kobe, 203 bls. bagging.
W. Garretson, *Besholt,* Shanghai, 210 bls. rags.
——, *Besholt,* Shanghai, 1000 bls. rags.
——, *Tokai Maru,* Osaka, 50 bls. cotton waste.
Loumar Textile By Products Co., *Tokai Maru,* Osaka, 300 bls. bagging.
——, *Binnendyk,* Rotterdam, 9 bls. rags.
Price & Pierce, Ltd., *Binnendyk,* Rotterdam, 900 bls. sulphite.
——, *Binnendyk,* Rotterdam, 62 rolls straw boards.
——, *Maria,* Trieste, 904 bls. wood pulp.

(Continued on page 60)

"Shaf-tites" for Paper Mills

No more loose shafts—in rolls of wood, rubber or metal. Patented head construction gives permanence. Light in weight—Low in cost.



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Improve the quality of your product by using Langston Shear-Cut Slitters which slice the paper cleanly from start to finish of the roll.

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Appleton Felts

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Appleton Woolen Mills, Appleton, Wisconsin

EVERY WEEK—

The Paper Trade Journal publishes the happenings of interest in the Pulp and Paper Industry—Covers it completely is saying it a little clearer.

To reach buyers in this field, advertising in these columns can carry your message to many that are interested in your products.

As a member of the Audit Bureau of Circulations our circulation claims are not only authentic but provable.

The Paper Trade Journal
15 West 47th St. New York

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, May 5, 1937.

Trading in the local paper market continues fairly satisfactory. Demand for the various standard grades of paper is moderately active. The contract movement is normal for the time of year. Sales forces of the leading paper houses are optimistic. Prices remain steady.

The position of the newsprint paper market is practically unchanged. Production in the United States, Canada, Newfoundland and abroad is proceeding at near capacity. Demand from the newspaper publishers is well sustained. Prices are holding to schedule.

Conditions in the fine paper market are fairly buoyant. Demand from book, cover, ledger and bond papers is fairly persistent. Prices are holding to schedule. Supplies of tissue are moving into consumption freely. The coarse paper market is firm with specialties going forward in larger volume.

Mechanical Pulp

The ground wood pulp market rules steady. Manufacturing operations in the United States, Canada and abroad are keyed to consumption as far as possible, with the view of meeting current orders. Shipments against contract are moving in good volume. Prices are firm.

Chemical Pulp

Paper mill demand for domestic and imported chemical pulp has fallen off slightly and revised prices have been announced. Prime easy bleaching sulphite is now quoted at from $3.50 to $3.75 and strong unbleached sulphite at from $3.40 to $3.65. Bleached kraft is stronger.

Old Rope and Bagging

The old rope market is displaying strength. Demand for domestic and imported old manila rope is insistent. Small mixed rope is moving freely. Old rope quotations are firm. The bagging market is only moderately active. Both scrap and gunny are moving slowly and prices are easy.

Rags

Business in the domestic rag market is rather quiet. Demand for new and old cotton rags is fairly active. Some grades are in request for export account, including No. 1 white shirt cuttings. Demand for roofing grades is slower and quotations have been lowered a trifle.

Waste Paper

The higher grades of paper stock are well sustained. White envelope cuttings, ordinary hard white No. 1, hard white No. 2 and soft white No. 1 are progressing favorably. Book stock is firm. Board mill demand for the lower grades is insistent. Prices are generally steady to firm.

Twine

Most of the business transacted in the local twine market during the past week was routine. Demand for the various varieties is moderately active. The contract movement is fairly active for the season. Prices are generally holding to previously quoted levels.

IMPORTS OF PAPER AND PAPER STOCK

(Continued from page 58)

Price & Pierce, Ltd., *Magna,* ——, 6330 bls. unbleached sulphite; 5100 bls. unbleached sulphate.
Price & Pierce, Ltd., *Tiradentes,* ——, 300 bls. unbleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 1, 1937

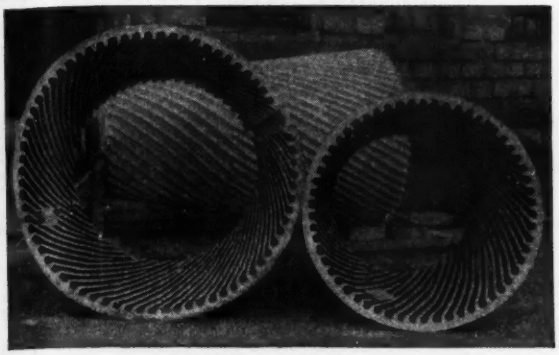
D. Benedetto, Inc., *Bronxville,* Naples, 63 bls. rags.
——, *Cold Harbor,* Hamburg, 1309 rolls wrapping paper.
J. Wallworth & Sons, *Cold Harbor,* Dundee, 26 bls. paper stock.
Public National Bank Trust Co., *Cold Harbor,* Dundee, 82 bls. paper stock.
Chase Bagging Co., *Cold Harbor,* Dundee, 78 bls. paper stock.
E. J. Keller Co., Inc., *Black Hawk,* ——, 123 bls. rags.
——, *Black Hawk,* Rotterdam, 68 bls. rags.
——, *Black Hawk,* Antwerp, 101 bls. rags.
W. Steck & Co., *Black Hawk,* Antwerp, 111 bls. jute waste.
J. M. Hagy Waste Works, *Besholt,* Kobe, 25 bls. rags.
——, *Besholt,* Kobe, 105 bls. rags.
E. J. Keller Co., Inc., *Exchester,* ——, 146 bls. rags.
E. J. Keller Co., Inc., *Haukefjell,* ——, 67 bls. rags.
——, *Haukefjell,* Antwerp, 55 bls. rags.
Philadelphia National Bank, *Maria,* Trieste, 18 bls. bagging.

SALESMEN'S STUDY COURSE GRADUATION

(Continued from page 26)

of The Thos. W. Price Company; Howard Lee, Raymond G. Underdown, John N. Wardle, George M. Neff, Thomas L. Winston, of Quaker City Paper Company; Samuel L. VanHest of Bentley Paper Company; S. T. Vance, Richard E. Jones, Clarence T. Garrett, Jr., George Crap, Joseph G. Konstance, Jack A. Wister, Douglas Colson, A. H. Anderson, of Raymond & McNutt Company; J. Ralph Neill, of Schuylkill Paper Company; T. H. B. Smythe, Joseph A. Riesle, Stanleigh C. Brower, of The J. L. N. Smythe Company; Thomas G. Goldkamp of Terminal Paper Company; Harold Hallman, of S. Walter, Inc.; Charles W. Seary, James Moeller, C. Wister Kesser, M. Walther, L. M. Baltzer, William J. O'Rourke, of D. L. Ward Company; Walter J. Schaller of Whiting Paper Company; John Lewis Thomas, Thomas C. Reid, John R. Whiting, Jr., Willson Whiting, Lee Tomlinson, George H. Beatty, Jr., Harold T. Robinson, of Whiting-Patterson Company; Hugh I. Monaghan, Kenneth S. Rhoades, John Burt, of Wilcox-Walter Furlong Paper Company.

REG. U.S. PAT. OFFICE "POSITIVE" TRADE MARK



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THE BAHR BROS. MFG. CO.

OUR SPECIALTY IS JORDAN FILLINGS

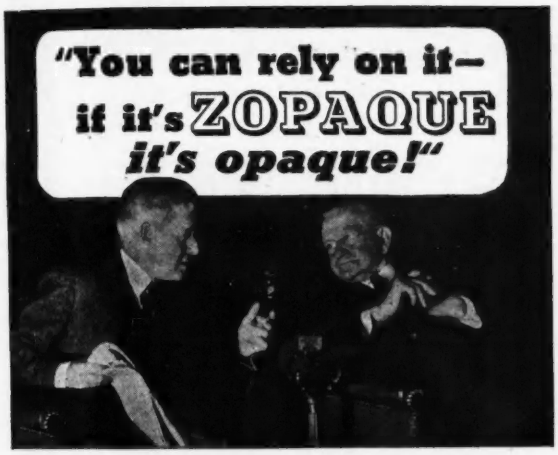
SPIRAL TYPE JORDAN FILLINGS
TWIN SPIRAL BAR JORDAN FILLINGS
THE OLD TYPE BAR JORDAN FILLINGS

Jordan fillings for every kind of stock, and for every known trade name and size Jordan. The bars, made of our stainless metal, resist the action of chemicals; also plain to meet the requirement in rough stock mills.

Place your refining problem up to us. Our high speed refiners are built for belt or V-belt drive; also for direct connected.

Your inquiries will have our prompt attention.

MARION, INDIANA, U. S. A.



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CANTON, MASS.

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Modified Longerimp
Duo-Wear and Regular Weave

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Any Degree of Bevel
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UNUSUALLY LOW PRICE!
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Makers of Grinders for 50 Years

ROGERS CIRCULAR KNIFE GRINDER

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, May 5, 1937.

BLANC FIXE.—The blanc fixe market is little changed. Prices are generally holding to formerly quoted levels. The pulp is offered at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market. Shipments against contract are moving in good volume. Prices are maintained at schedule. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN.—The casein market is softer at present. Domestic standard ground casein is now quoted at from 14 to 14½ cents per pound; while domestic finely ground casein is selling at from 14½ to 15 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Paper mill demand for caustic soda is fairly persistent. The contract movement is well up to average. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.85 to $3 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Contract shipments are moving freely. Imported china clay is quoted at from $15 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE.—Conditions in the chlorine market are fairly satisfactory. The contract movement is well up to average. Prices are holding to formerly quoted levels. Chlorine is selling at from $2.15 to $2.25 per 100 pounds, in tank cars, at works.

ROSIN.—The rosin market is little changed. Paper making gum rosin is now quoted at $8.10 and wood rosin at $8.50 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $3.64 per 100 pounds, in tank cars, at works.

SALT CAKE.—Business in the salt cake market is holding up well. Prices are steady and unchanged. Salt cake is quoted at from $12 to $13; chrome salt cake at from $11 to $12 per ton, at works; while imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH.—The position of the soda ash market is practically unchanged. Demand from the paper mills is well maintained. Prices are steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Trading in the local starch market is fairly active. The contract movement is normal for the season. Prices are holding to schedule. Special paper making starch is quoted at $4 per 100 pounds, in bags; and at $4.27 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is firmer. Contract shipments are moving in good volume. Commercial grades are quoted at from $1.35 to $1.60; while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton on orders of 1,000 tons, or over, and $20 on smaller quantities. On spot and near by car loads the quotations is $21 per ton. All quotations are in car lots, at works.

TALC.—Demand for talc is holding up fairly well for the time of year. Prices are holding to schedule, in most instances. Domestic talc is quoted at from $15 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers—Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.29 @	.30
75% Rag	.22 @	.23
65% Rag	.19 @	.20
50% Rag	.15½ @	.16½
25% Rag	.13 @	.14

Sulphite Bond & Ledgers—Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	8.00 @	9.00
No. 2 Sulphite	7.00 @	8.00
No. 3 Sulphite	6.75 @	7.75
No. 4 Sulphite	6.50 @	7.50
Book, B Grade, Cased (f.o.b. mill less carload freight allowed)		
S. & S. C.	6.00 @	—
S. & S. C. Litho.	6.25 @	—
M. F.	5.75 @	—
No. 4 Coated and Enamel	7.00 @	—
No. 4 Coated Litho	7.00 @	—
Tissues—Per Ream—		
White No. 1	.95 @	—
White No. 1 M. G.	.92½ @	—
White No. 1½	.67½ @	—
White No. 2	.62½ @	—
Anti-Tarnish M. G.	.75 @	—
Colored	.87½ @	—
Kraft	.75 @	—
Manila	.62½ @	—
Unbleached Toilet.	2.60 @	3.30
Bleached Toilet	3.94 @	5.26
Paper Towels—		
Unbleached	2.10 @	3.35
Bleached	3.30 @	3.70
Manila—		
No. 1 Jute	9.00 @	9.25
No. 2 Jute	7.75 @	8.50
No. 1 Wood	4.00 @	5.25
No. 2 Wood	3.50 @	4.00
Fibre Papers—		
No. 1 Fibre	4.25 @	5.50
No. 2 Fibre	4.00 @	4.75

(Delivered New York)

News, per ton—		
Roll, contract	42.50 @	—
Sheets	47.50 @	—
Kraft—		
No. 1 Northern	5.25 @	5.75
Standard	5.00 @	—
Southern	5.00 @	—
Glazed	4.50 @	—
Striped	4.75 @	—
Boards, per ton—		
News	47.50 @	50.00
Chip	45.00 @	47.50
Sgl. Mla. Ll. Chip.	55.00 @	60.00
Jute Lined Chip	55.00 @	60.00
Kraft Liners	65.00 @	67.50
White Pat. Coated	67.50 @	70.00
Binders Boards	70.00 @	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	33.00 @	36.00
Dry	40.00 @	42.00

(Delivered)

No. 1 Domestic and Canadian	33.00 @	36.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Prime Bleached Sulphite	2.90 @	4.50
Prime Qualities—		
Easy-Bleaching Sulphite	3.50 @	3.75
Strong Unbleached Sulphite	3.40 @	3.65

(On Dock, Atlantic Ports)

Kraft Bleached	3.50 @	4.50
Kraft Light & Strong	2.75 @	3.75
Kraft No. 1	2.50 @	3.50
Kraft No. 2	2.50 @	2.75

(F.o.b. Pulp Mill)

Kraft Domestic	2.50 @	3.25

(Delivered)

Soda Bleached	2.90 @	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1.	9.00 @	9.25
Silesias No. 1	6.75 @	7.00
New Unbleached	9.25 @	9.50
Blue Overall	7.50 @	8.00
Fancy	4.00 @	4.50
Washables	3.00 @	3.50
Mixed Khaki Cuttings	4.25 @	4.50
O. D. Khaki Cuttings	4.75 @	5.00

Old Rags

White, No. 1—		
Repacked	3.50 @	3.75
Miscellaneous	3.00 @	3.25
White, No. 2—		
Repacked	2.50 @	2.75
Miscellaneous	2.00 @	2.25
Thirds and Blues—		
Repacked	2.00 @	2.25
Miscellaneous	1.90 @	2.00
Roofing Rags—		
No. 1	Nominal	
No. 2	1.55 @	1.65
No. 3 (bagging)	1.25 @	1.35
No. 4	1.25 @	1.35
No. 5A	1.10 @	1.15

Foreign Rags

New Rags

New Dark Cuttings	2.25 @	2.50
New Mixed Cuttings	2.00 @	2.25
New Light Silesias	5.50 @	5.75
Light Flannelettes	5.50 @	5.75
New White Cuttings	7.00 @	7.50
New Light Oxfords	4.00 @	4.50
New Light Prints	3.00 @	3.25

Old Rags

No. 1 White Linens	7.50 @	8.00
No. 2 White Linens	6.50 @	7.00
No. 3 White Linens	4.50 @	5.00
No. 4 White Linens	2.25 @	2.50
No. 1 White Cotton	4.25 @	4.75
No. 2 White Cotton	3.25 @	3.75
No. 3 White Cotton	2.50 @	2.75
No. 4 White Cotton	1.90 @	2.15
Extra Light Prints	2.00 @	2.25
Ord. Light Prints	1.75 @	1.85
Med. Light Prints	1.55 @	1.65
Dutch Blue Cottons	2.25 @	2.50
French Blue Linens	3.50 @	4.00
German Blue Linens	2.50 @	2.75
German Blue Cottons	2.00 @	2.25
Checks and Blues	2.00 @	2.25
Linsey Garments	2.25 @	2.35
Dark Cottons	2.15 @	2.25
Old Shopperies	1.75 @	2.00
New Shopperies	1.75 @	2.00
French Blues	2.25 @	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	2.25 @	2.35
Domestic	2.15 @	2.25
Wool Tares, light	1.75 @	1.85
Wool Tares, heavy	2.20 @	2.35
Bright Bagging	1.70 @	1.75
Manila Rope—		
Foreign	5.00 @	5.25
Domestic	5.25 @	5.50
Jute Strings	2.75 @	3.00
Sisal Strings	2.60 @	2.75
Mixed Strings	Nominal	

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	3.25 @	3.50
Ordinary Hard White No. 1	2.60 @	2.70
Hard White No. 2	2.50 @	2.60
Soft White No. 1	2.40 @	2.50
Flat Stock—		
Stitchless	1.45 @	1.55
Over issue Mag	1.45 @	1.55
Solid Flat Book	1.40 @	1.45
Crumbled No. 1	1.20 @	1.25
Ledger Stock	1.30 @	1.35
New B. B. Chips	.65 @	.70
Manila—		
New Env. Cut	2.25 @	2.35
New Cuttings	1.90 @	2.10
Old Kraft Machine—		
Compressed bales	1.85 @	1.95
News—		
No. 1 White News	1.50 @	1.60
Strictly Overissue	.90 @	1.00
Strictly Folded	.79 @	.80
No. 1 Mixed Paper	.70 @	.80

RAG CUTTERS

TAYLOR, STILES & COMPANY
TRADE MARK
GIANT
REG. U.S. PAT. OFF.
RIEGELSVILLE, N.J.U.S.A.

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SCIENTIFICALLY ENGINEERED
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The Frederick Iron & Steel Co., Frederick, Maryland

PERFORATED METAL SCREENS
MADE SPECIALLY FOR PAPER and PULP MILL USE
Copper, bronze, steel or other metals. Heat-treated.
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Write for interesting and useful bulletin on Non-Clogging Pumps for handling pulp, and centrifugal pumps for other mill processes and services.
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INTERNATIONAL WIRE WORKS
Fourdrinier Wires
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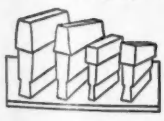
WOOD COGS
OF ALL DESCRIPTIONS, BLANK OR FINISHED
From Thoroughly Seasoned New Hampshire Rock Maple



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Lancaster, - New Hampshire

WEB TENSION DEVICE SYNCHRONIZES WINDER WITH CALENDER STACK

CAMACHINE 48-9 produces rolls straight on the ends and uniformly wound from the core out. Write for details.

CAMERON MACHINE COMPANY
61 POPLAR ST. BROOKLYN, N. Y.

Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—

India	.15¼	@	.17¼
Belg. White Hemp	.16¼	@	.19¼
India Compress	.15¼	@	.16¼

Fine Polished—

Fine India	.21	@	.23

Unpolished—

Box	.11¼	@	.11¾
Paper Makers	.11	@	.13
Tube Rope	.12	@	.14¾
Wall Paper	.13	@	.13¾
Wrapping	.16	@	.20
Soft Fiber Rope	.14¾	@	.14¾

(Hard Fibre)

Bond	.13½	@	.22
Anchor	.13	@	.14½
Manila	.21	@	.28

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M.F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.75	@	—
Coated Lithograph	6.75	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	42.50	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.08	@	.08½
New White, No. 2.	.04½	@	.05
Light Silesias	.05½	@	—
Silesias, No. 1	.04½	@	.05
Black Silesias, soft	.03½	@	.04
New Unbleached	.06	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.07	@	.07½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.03	@	—
New Black Soft	.04	@	.04½
New Light Seconds	.03½	@	.04
New Dark Seconds	2.00	@	2.25
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	.03½	@	.04
Corduroy	.02	@	.02¾
New Canvas	.04	@	.04½
New Black Mixed	.02	@	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.20	@	2.25
Domestic No. 1	2.00	@	2.10
Domestic No. 2	1.90	@	2.00
Roofing bagging	1.75	@	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	4.50	@	—
Sisal Rope	3.00	@	—
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.25	@	2.50
No. 2	1.00	@	1.10
Wool Tares, heavy	3.25	@	3.50
Mixed Stringa	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	—	@	2.60
No. 2 Hard White	2.20	@	2.25
No. 1 Soft White	2.00	@	2.10
No. 2 Soft White	1.75	@	—
No. 1 Mixed	—	@	.85
Solid Ledger Stock	—	@	1.75
Ledger Stock, white	1.75	@	—
Ledger Stock, colored	1.50	@	—
No. 1 Books, heavy	1.20	@	1.25
Manila Cuttings	1.80	@	1.90
Print Manila	.75	@	.85
Container Manila	.80	@	—
Kraft Paper	1.75	@	—
No. 1 Mixed Paper	.65	@	—
Straw Board Chip	.50	@	—
Binders Board Chip	.50	@	—
Corrugated Board	.70	@	.80
Overissue News	.75	@	.80
Old Newspapers	.65	@	.70

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.65	8.65
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.25	7.25
No. 4 Sulphite	6.50	7.50

F.o.b. Mill

Book, Super	.06½	@	.09½
Book, M. F.	.06	@	.09
Book, Coated	.09	@	.18½
Coated Litho	.09	@	.14
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¼	@	.04½
No. 1 Kraft	.05¼	@	—
No. 2 Kraft	.05	@	—

(Delivered New England points)

Southern Kraft	.05	@	—
News Print Rolls	42.00	@	—
Straw Board, rolls	42.50	@	45.00
Filled News Board	50.00	@	52.50
Chip Board	47.50	@	50.00
Single Manila Lined Chip	57.50	@	62.50
Single White, Patent Coated News Board (Bender)	70.00	@	77.50
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	75.00	@	80.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.20	@	2.35
No. 1 Soft White	1.85	@	2.15
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers	85	@	.90
No. 1 Books, heavy	1.40	@	—
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.60	@	1.70
Manila Env. Cuttings, extra quality	2.20	@	2.30
No. 1 Old Manila	.95	@	1.00
White Blank News	1.30	@	1.40
No. 1 Kraft	2.00	@	—
Mixed Papers	.60	@	.65
Print Manila	.75	@	.85
Container Manilas	.27½	@	—
Old Newspapers	.65	@	.67½
Overissue News	.50	@	.65
Box Board Chips	.55	@	.60
Transmission Rope	2.00	@	2.25
Corrugated Boxes	.85	@	.95
Kraft corrugated boxes	1.80	@	1.85
Screening Wrappers	.60	@	.65

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	4.75	@	—
Domestic	4.75	@	—
Jute Rope	2.50	@	2.75
Soft Jute Strings	2.75	@	3.00
Jute Carpet Threads	1.75	@	2.00
Gunny No. 1—			
Foreign	2.35	@	2.50
Domestic	2.10	@	2.20
Bleachery Burlap	4.25	@	4.50
Scrap Burlap—			
Foreign	2.25	@	2.35
Domestic	2.10	@	2.20
Scrap Sisal	2.60	@	2.75
Scrap Sisal for Shredding	2.75	@	3.00
Wool Tares, heavy	2.40	@	2.60
New Burlap Cuttings	2.85	@	3.00
Aust. Wool Pouches	3.37½	@	—
Heavy Baling Bagging	2.40	@	2.75
Paper Mill Bagging	1.75	@	1.80
Bagging No. 2	1.70	@	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings			
New Light Prints	.04	@	.04¼
New White No. 1	.09	@	.09¼
New White No. 2	.06¼	@	.07
New Light Flannelettes	.07½	@	—
Silesias No. 1	.07¾	@	.08
New Black Silesias	.04½	@	.04½
Soft Unbleached	.09½	@	.09¾
Blue Cheviot	.07½	@	.07¾
Fancy	.03¾	@	.04
Washable	.03	@	.03¼
Cottons—According to grades—			
Blue Overalls	.07½	@	.07¾
New Black, soft	.04¼	@	.04½
Khaki Cuttings	.04¾	@	.05
O. D. Khaki	.05	@	.05¼
Corduroy	.03¼	@	.03½
New Canvas	.07¾	@	.08¼
B.V.D. Cuttings	.08¾	@	.09

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	1.60	@	1.70
No. 2	1.50	@	1.55
No. 3	1.25	@	1.30

Foreign Rags

(F. o. b. Boston)

Dark Cottons	2.00	@	2.10
Dutch Blues	3.00	@	3.15
New Checks and Blues	2.85	@	3.00
Old Fustians	2.85	@	3.00
Old Linsey Garments	2.50	@	2.65
New Silesias	6.50	@	7.00

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04½	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Pag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	3.30	@	3.40
No. 1 Hard White	2.60	@	2.70
No. 1 Soft White	2.10	@	2.25
Ledger & Writings	1.40	@	1.50
Solid Books	1.25	@	1.30
Blanks	1.50	@	1.65
Krafts	1.00	@	1.25
New Kraft Cuts	1.80	@	2.00
Manila Env. Cuts	2.20	@	2.35
Ex. No. 1 Manila	2.20	@	2.35
Print Manila	1.70	@	1.80
Overissue News	.80	@	.90
Old Newspapers			
No. 1 Folded News	.80	@	.90
No. 1 Mixed Paper	.80	@	.90
Rooting Stocks—			
No. 1	2.00	@	2.25
No. 2	1.85	@	2.00

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35¼	@	—
No. 1 Tints	.36½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	.15	@	—
No. 4 Tints	.16	@	—
No. 5 Bond—White	.11	@	—
No. 5 Bond—Tints	.12	@	—
No. 5 Bond — Golden Rod	.13	@	—
No. 5 Ledger—White	.11½	@	—
No. 5 Ledger—Tints	.12	@	—
No. 6 Bond—White	.10½	@	—
No. 6 Bond—Tints	.11	@	—
No. 6 Bond—Golden Rod	.12½	@	—
No. 7 Bond—White	.08¾	@	—
No. 7 Bond—Tints	.09¼	@	—
No. 7 Bond—Golden Rod	.10¾	@	—
Boxes—			
No. 1 M. F.	6.75	@	7.00
No. 2 M. F.	6.50	@	6.75
No. 3 M. F.	5.25	@	5.75
No. 1 S. C.	7.25	@	7.50
No. 2 S. C.	6.75	@	7.00
No. 3 S. C.	5.75	@	6.00
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.85	@	—
White Wrap	4.00	@	—
"B" Manila	4.90	@	—
No. 1 Manila	5.50	@	—
Fiber	5.50	@	—
Kraft, M. F.	6.00	@	—
Kraft, No. 2	5.50	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	38.50	@	—
Sheets	45.50	@	—

Pulp

Ground wood	30.00	@	31.00
Unbleached Sulphite	52.00	@	53.00
Book (Class 1)	65.00	@	66.00
Writing (Class 2)	66.00	@	67.00
Select (Class 3)	67.00	@	68.00

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.50	@	—
Soft White	2.15	@	—
White Blk. News	1.45	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.00	@	—
Light and Crumpled Book Stock	1.15	@	—
Ledgers and Writings	1.20	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.55	@	—
Kraft	1.00	@	1.00
News and Sorap—			
Strictly Overissue	.75	@	—
Strictly Folded	.80	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09	@	.09½
Fancy Shirt Cuttings	.03¼	@	.04